Natural Philosophy and Medicine in John Buridan

Natural Philosophy and Medicine in John Buridan

With an Edition of Buridan's *Quaestiones de secretis mulierum*

Proefschrift
ter verkrijging van de graad van doctor
aan de Radboud Universiteit Nijmegen
op gezag van de rector magnificus prof. dr. J.H.J.M. van Krieken,
volgens besluit van het college van decanen
in het openbaar te verdedigen op vrijdag 17 februari 2017

om 15.30 uur precies

door

Chiara Beneduce
geboren op 27 juli 1989
te Rome (Italië)

Promotoren:
Prof. dr. P.J.J.M. Bakker
Prof. dr. S. Perfetti (Università di Pisa, Italië)

Manuscriptcommissie:
Prof. dr. J.M.M.H. Thijssen
Prof. dr. J. Biard (Université François-Rabelais de Tours, Frankrijk)
Prof. dr. P. De Leemans (KU Leuven, België)

On the cover: the front cover image is taken from UB Erfurt, Dep. Erf. CA. 4° 299, f.167^{r} (detail). Reproduced with the permission of the Universitätsbibliothek Erfurt.

Printed by Koninklijke Wöhrmann, Zutphen
Typesetting by TAT Zetwerk, Utrecht

Natural Philosophy and Medicine in John Buridan

With an Edition of Buridan's *Quaestiones de secretis mulierum*

Doctoral Thesis
to obtain the degree of doctor
from Radboud University Nijmegen
on the authority of the Rector Magnificus prof. dr. J.H.J.M. van Krieken
and from the University of Pisa
on the authority of the Rector Magnificus prof. dr. P.M. Mancarella
to be defended in public on Friday, 17 February 2017

at 15.30 hours

by

Chiara Beneduce
Born on 27 July 1989
in Rome (Italy)

Supervisors:
Prof. dr. P.J.J.M. Bakker
Prof. dr. S. Perfetti (University of Pisa, Italy)

Doctoral Thesis Committee:
Prof. dr. J.M.M.H. Thijssen
Prof. dr. J. Biard (Université François-Rabelais de Tours, France)
Prof. dr. P. De Leemans (KU Leuven, Belgium)

On the cover: the front cover image is taken from UB Erfurt, Dep. Erf. CA. 4° 299, f.167^{r} (detail). Reproduced with the permission of the Universitätsbibliothek Erfurt.

Printed by Koninklijke Wöhrmann, Zutphen
Typesetting by TAT Zetwerk, Utrecht

Contents

Acknowledgements

This doctoral thesis has grown in my luggage while moving with me to several places, including Rome, Pisa, Nijmegen, Turin, and the American Mid-West. In all these places, I met people who taught me a lot and made my life great. Among these people, I am most grateful to my supervisor in Nijmegen, Prof. Paul Bakker. I thank him for his support and his teachings. He showed me the true meaning of 'working hard and professionally' and helped me to see how I could gradually transform myself from a student into a scholar. Most importantly, he has been very patient with me: he made an excellent job facing my (several) panicking moments. In Nijmegen, I have two additional mentors who never let me alone: prof. Carla Rita Palmerino and prof. Christoph Lüthy. Since the first moment of our (incredible) meeting at a southern-Italian seashore, they have been my Dutch family. I want to thank all the other colleagues of the *Center for the History of Philosophy and Science* for welcoming me in the past three years. I am especially grateful to Elena, Lyke, Antonio, Davide, Bill, Delphine, Trish, and Oki for being so helpful and friendly. Part of this Ph.D. project took place under the leaning tower, together with my Italian supervisor, prof. Stefano Perfetti, who always encouraged me to have a broader sight on philosophy and to read as much as possible. I am still working on the first point, but I am glad that I always found the second task a great side of this job. In Pisa, I have also been part of a wonderful group of graduate students who immediately became my beloved friends: Denise, Anna, Stefania, Maria Carla, Mattia, Fabio, Federico, and Matteo. Thank you, guys. You know how much our friendship and solidarity made things smoother down there. The same applies to Sonia and Letizia, particularly for kindly sharing with me their square meters and some exciting mosquito hunt parties. My experience as a philosophy student started in Rome. I would like to thank prof. Riccardo Chiaradonna for supporting my projects and my friends Anna Maria, Arianna, Maria Luisa, and Luca for sharing with me unforgettable moments and research interests. I would like to thank all my other friends all across Italy and the ones spread out in Europe pursuing their careers. My life is blessed by them and by my family: huge thanks go to my mother Maria Olga, my father Sandro, my brothers Nicola and Leonardo, my parents-in-law Maria Teresa and Pietro, my friend Francesca, and my husband Pierluigi (the only FIAT guy who knows Buridan's natural philosophy by heart).

Notre Dame (IN), December 12, 2016

CHAPTER 1

Introduction: Buridan Scholarship, Old and New Perspectives

1.1. Medieval Knowledge and the University

The story told in this volume is framed into the context of the medieval universities, especially the University of Paris in the fourteenth century. Universities in the late Middle Ages constitute the most prominent location where knowledge developed and education took place. Their structure deeply shaped the outcomes of medieval intellectual activity. The history of the late medieval thought produced at the universities can be better understood by taking into account the relationship between faculties and disciplines, ways of teaching and *curricula* on which classes were based, and the career paths medieval students and teacher could walk.

Standardly, a medieval university was divided into four faculties: the faculty of Arts, at a first level, and three additional 'higher' faculties, i. e., Theology, Law and Medicine. Therefore, after a training at the faculty of Arts, the expected path was to continue the study and the career at the more specialized faculties of Theology, Law and Medicine. In each of these faculties, teaching was based on different institutionalized groups of texts. For example, the *curriculum* of the faculty of Arts was mostly composed by the Aristotelian works; theologians mostly referred to the *Bible* and to Peter Lombard's *Sentences*; the faculty of Law had the *Corpus Iustinianeum* as the main reference; while physicians referred to many medical authors and works among which the most prominent were the ones collected in the *Articella corpus*, together with Avicenna's *Canon* and Averroes' *Colliget*.

Since the faculty of Arts was conceived as a preparation for subsequent studies, the disciplines taught there had a wider range than in the other faculties: logic, grammar, metaphysics, practical philosophy, and natural philosophy. As previously said, the teaching consisted mostly of analytical readings of the Aristotelian works, whose reception and acceptance in a Christian cultural framework was, at times, controversial. This journey, eventually, made the *corpus aristotelicum* the fundamental source of learning of the medieval West.

The institutional boundaries between faculties were neat, especially in Paris. Yet, the wealth of knowledge coming from Aristotle's authority and the disciplines taught

at the faculty of Arts interacted with the disciplines and contents taught in the other faculties, causing both conflicts and mutual exchanges. The story I am about to tell here is in fact a case about boundaries and relationship between natural philosophy and medical tradition. The main character of this story will be John Buridan, whose teaching took place at the Parisian faculty of Arts in the fourteenth century.[1]

1.2. Buridan's Life and Works

John Buridan ranks among the most important and influential philosophers of the later Middle Ages. Our knowledge of his biography is, however, strikingly poor. For one, we possess no certainty about the dates of his birth and death: it is generally inferred from some institutional documents that he was born around 1300 (or even one decade earlier) in the diocese of Arras (north of France) and that he died not later than 1361. Neither do we have a lot of secure information about the details of Buridan's career. He received his master's degree and teaching license not later than 1325. Due to his geographical origin, he belonged to the Picard nation of the University of Paris and, during his studies, he was financially supported by the Collège du Cardinal Lemoine. He was Rector of the University of Paris twice and it seems that he visited the Papal court in Avignon also twice.[2] The aspect of Buridan's career that mostly attracted

1 Literature on the medieval university and its intellectual organization is vast. Several topics related to the general framework mentioned in this introductory section will be more specifically addressed in other parts of this thesis, with the indication of the relevant literature (see especially *infra*, 49–50). Here, I just refer to a book on disciplines and learning at the medieval university in the thirteenth and fourteenth century, L. Bianchi (ed), *La filosofia nelle università. Secoli XIII–XIV*, La Nuova Italia Editrice, Firenze 1997, and, as regards teaching at the faculty of Arts in Paris and Oxford, to O. Weijers and L. Holtz (eds), *L'enseignement des disciplines à la Faculté des arts: Paris et Oxford, XIII^{e}–XV^{e} siècles. Actes du colloque international*, Brepols, Turnhout 1997.

2 For an account of Buridan's life, see especially B. Michael, *Johannes Buridan: Studien zu seinem Leben, seinen Werken und zur Rezeption seiner Theorien im Europa des späten Mittelalters*, 2 vols., unpublished Ph.D. thesis, Freie Universität Berlin, 1985, 1: 79–235. The first attempt of reconstructing in some detail Buridan's biography was made by E. Faral, see E. Faral, *Jean Buridan, maître ès arts de l'Université de Paris*, Imprimerie Nationale, Paris 1950. For updated summaries of Buridan's life and career – that I used for this brief account – see especially J.M.M.H. Thijssen, 'Buridan, John (Jean)', in: N. Koertge (ed), *New Dictionary of Scientific Biography*, 1, Thomson Gale, Farmington Hills 2008, 446–448; the 'Introduction' in John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros De *generatione et corruptione* Aristotelis, A Critical Edition with an Introduction, Brill, Leiden 2010, 1–33, esp. 1–2, and F. Kok, *A Faithful Philosopher. Philosophy and Theology in John Buridan's Commentary*

scholarly attention was the fact that he stayed at the Faculty of Arts as a *magister*, without moving on to one of the 'higher' faculties, in particular to the Faculty of Theology at any point of his life. The astonishment about this aspect of Buridan's career has been put into historical perspective: it was uncommon, but there are some other examples of similar career paths.[3] Nevertheless, this feature of Buridan's life remained an intriguing point, sometimes tempting scholars to write about Buridan as a 'true' philosopher, who tried hard not to be conditioned by the boundaries imposed by theology, and who even denied the principles of the Catholic faith. This view has rightly been called into question: the relationship between Buridan, theology, and the faith is far too complex to reduce it to the simple characterization of Buridan as *The* true, professional, and even 'nonreligious' philosopher.[4]

Buridan is the author of a great number of works. As a Master of Arts, he mostly produced commentaries on the Aristotelian *corpus*: mainly logic, metaphysics, practical philosophy, and natural philosophy.[5] These commentaries appear in two

---

on Aristotle's Metaphysics, unpublished Ph.D. thesis, Radboud University, Nijmegen 2014, 3–5. Additional and specific information on Buridan's life and career are contained in W.J. Courtenay, 'Philosophy's Reward. The Ecclesiastical Income of Jean Buridan', *Recherches de théologie et philosophie médiévales*, *68* (2001), *163–169* (on Buridan's financial situation), S. Sechler, *Rectors of the Fourteenth-century University of Paris: An Institutional and Prosopographical Study*, unpublished Ph.D. thesis, University of Wisconsin-Madison (WI) *1997*, *137–138*, and R. Paqué, *Das Pariser Nominalistenstatut. Zur Entstehung des Realitätsbegriffs der neuzeitlichen Naturwissenschaft*, W. de Gruyter, Berlin 1970, *70–71* (for information on Buridan as a rector of the University of Paris). On some anecdotes regarding Buridan's life, but disproved by scholars, see A. Ghisalberti, *Giovanni Buridano: dalla metafisica alla fisica*, Vita e Pensiero, Milano 1992, 10, footnote 1; B. Michael, op. cit., 1: *79*, *293*, and A.H. Krappe, 'The Legend of Buridan and the Tour de Nesle', *Modern Language Review*, *23* (1928), *216–222*.

3 See W.J. Courtenay, 'The University of Paris at the Time of Jean Buridan and Nicole Oresme,' *Vivarium*, *42* (2004), *3–17*, esp. *16*. Courtenay lists several names, as for example Petrus de Vallepartis, Robertus Fabri, Honoratus de Porta, Henricus Bobei, Johannes Chacardi, Johannes Durandi, Johannes Sieranviller, and Petrus Melmete. Another author to be mentioned is Siger of Brabant.

4 The view of Buridan as a 'pure' philosopher strongly influenced, for example, O. Pluta's interpretation of Buridan's conception of the intellective soul as material and mortal. See *infra*, footnote 39. To reconsider this view on Buridan was the main aim of F. Kok in her Ph.D. thesis. Kok especially studied the relationship between philosophy and theology in Buridan's commentary on Aristotle's *Metaphysics* and concluded her work with these words: 'He [Buridan] was a professional philosopher but he was also a faithful philosopher, loyal to both philosophy and faith'. See F. Kok, *A Faithful Philosopher*, cit., 208. I refer the reader to Kok's thesis for an outline and a bibliography on this issue, see F. Kok, *A Faithful Philosopher*, cit., *27–35*.

5 For the most detailed and accurate overview of Buridan's works, manuscripts and editions of Buridan's works, and (older) secondary literature on Buridan, see Michael, *Johannes Buridan*, vol. 2; O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, IV, Brepols, Turnhout 2001, *127–165*; J.M.M.H. Thijssen, 'Buridan, John (Jean)', cit.; C.H. Lohr and C. Colomba,

types: the *expositiones* and the *quaestiones*. The *expositiones* were literal commentaries on an authoritative work to present its main features (both with respect to content and with respect to structure); on the other hand, the *quaestiones* were formulated in order to problematize a particular thesis of the authoritative work, to introduce the master's own interpretation of such a tenet and his views on correlated topics addressed in the discipline to which the work belonged. In Buridan's production, there is sometimes more than one commentary on the same work: this phenomenon should probably be explained by the fact that Buridan, during his long career at the Arts Faculty, gave several courses (*lecturae*) on the same Aristotelian works.[6] Probably as a result of Buridan's popularity, there are often several manuscripts of a same *lectura* and some early modern printed editions of Buridan's works, not always exactly coinciding with the versions preserved in the manuscripts.[7] This makes the *corpus*

Latin Aristotle Commentaries. Medieval authors, 1/1: A–L, SISMEL Edizioni del Galluzzo, Firenze 2013, 246–267 (i. e., a revision of C.H. Lohr, 'Medieval Latin Commentaries. Authors: Jacobus-Johannes Juff', *Traditio 26* [1970], 161–183); and J. Zupko, *John Buridan: Portrait of a Fourteenth-century Arts Master*, University of Notre Dame Press, Notre Dame (IN) 2003, 275–277. See also, for secondary literature, C.H. Lohr, *Latin Aristotle Commentaries. V. Bibliography of Secondary Literature*, SISMEL Edizioni del Galluzzo, Firenze 2005, 297–309 and J. Zupko, 'John Buridan', *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed), URL = http://plato.stanford.edu/archives/spr2014/entries/buridan/.

6 On literary genres and ways of teaching in late medieval university, see F. Del Punta, 'The Genre of Commentaries in the Middle Ages and Its Relationship to the Nature and Originality of Medieval Thought' in: J.A. Aertsen and A. Speer (eds), *Was ist Philosophie im Mittelalter? Akten des X. Internationalen Kongresses für mittelalterliche Philosophie der Société Internationale pour l' Etude de la Philosophie Médiévale, 25. bis 30. August 1997 in Erfurt*, W. de Gruyter, Berlin-New York 1998, 138–151; the contributions in G. Fioravanti, C. Leonardi and S. Perfetti (eds), *Il commento filosofico nell'occidente latino (secoli 13.–15.): atti del colloquio Firenze-Pisa, 19–22 ottobre 2000, organizzato dalla* SISMEL *(Società Internazionale per lo Studio del Medioevo Latino) e dalla* SISPM *(Società Italiana per lo Studio del Pensiero Medievale), sotto l'egida della* SIEPM, Brepols, Turnhout 2002. See also O. Weijers, *La disputatio à la Faculté des arts de Paris (1200–1350 environ): esquisse d' une typologie*, Brepols, Turnhout 1995, Ead., *La disputatio dans les Facultés des arts au Moyen Âge*, Brepols, Turnhout 2002, and the contributions in O. Weijers and L. Holtz, *L' enseignement des disciplines à la Faculté des arts: Paris et Oxford, 13.–15. Siècles. Actes du colloque international*, Brepols, Turnhout 1997.

7 On the fortune, influence, and spread of Buridan's works and theories see W.J. Courtenay, 'The University of Paris at the Time of Jean Buridan and Nicole Oresme,' *Vivarium, 42* (2004), 3–17; A.L. Gabriel, '*Via antiqua* and *via moderna* and the Migration of Paris Students and Masters to the German Universities in the Fifteenth Century', in: A. Zimmermann (ed), *Antiqui und Moderni. Traditionsbewusstein und Fortschrittsbewusstein im späten Mittelalter*, W. de Gruyter, Berlin-New York 1974, 439–483; B. Michael, op. cit., 1: 286–336; M. Markowski, 'L' influence de Jean Buridan sur les universités d' Europe centrale', in: Z. Kaluza and P. Vignaux (eds), *Preuve et raisons à l' Université de Paris: logique, ontologie et théologie au XIV^e^ siècle*, Vrin, Paris 1984, 149–163. G. Klima has some interesting

of Buridan's works very complex to analyze and makes it difficult to reconstruct a complete internal chronology of Buridan's works.[8]

1.3. Trends in Buridan Scholarship: From the *impetus* Onwards

1.3.1. *Buridan as a Precursor of Modern Science*

Buridan scholarship owes its origin and fortune to two great historians of science in the first half of the 20th century: Pierre Duhem and Anneliese Maier. In their overall project of documenting the medieval contributions to science, both scholars attributed a prominent role to John Buridan's natural philosophy.[9] Duhem and Maier's studies, and the debate that followed, made Buridan's teachings on natural philosophy an unavoidable and constant point of reference to be mentioned in the discussion on the heritage modern science received from the Middle Ages. In other words, the debate on the continuity and/or discontinuity between medieval thought and modern science established a firm link between the name of Buridan and the science of nature.[10]

---

remarks on why Buridan was so successful as a Master of Arts: 'It was Buridan's careful attention to theoretical detail, coupled with his prudent practical judgment and pedagogical skill, that in his hands could turn Ockham's innovations into relatively uncontroversial, viable textbook material, capable of laying the foundations of a new, paradigmatically different conception of the relationships between language, thought and reality …'. See G. Klima, 'Nominalist Semantics', in: R. Pasnau and C. van Dyke (eds), *The Cambridge History of Medieval Philosophy*, 1, Cambridge 2010, 159–172, esp. 171–172.

8 See J.M.M.H. Thijssen, 'Buridan, John (Jean)', cit., 447. For some dates of internal chronology, see the 'Introduction' in the edition of Buridan's commentary on the *De generatione et corruptione*, John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros *De generatione et corruptione* Aristotelis, A Critical Edition with an Introduction, Brill, Leiden 2010, 1–33, esp. 2–3.

9 See P. Duhem, *Études sur Léonard de Vinci*, 3 vols., Hermann, Paris 1906–1913 (especially the third volume) and Id., *Le système du monde: histoire des doctrines cosmologiques de Platon a Copernic*, Hermann, Paris, 1913–1959 (especially the eighth volume); the whole series by Maier, A. Maier, *Studien zur Naturphilosophie der Spätscholastik*, Storia e Letteratura, Roma 1949–1958, and Ead., 'Die naturphilosophische Bedeutung der scholastischen Impetus-theorie', *Theologie und Philosophie* 30, 3 (1955), 321–343.

10 For a recent description of this debate, see C. Crisciani, 'Note sul pensiero scientifico medievale. Storiografia, questioni, ricerche', in: F. Bevilacqua and P. Contardini (eds), *Storia, Didattica, Scienze. Pavia 1975–2010. Atti del Convegno. Università di Pavia, 7 maggio 2010*, Pavia University Press, Pavia 2012, 21–35. Among the most famous scholars and studies that contributed to the debate that followed Duhem and Maier's research, I list A.C. Crombie, *Augustine to Galileo: the History of Science* A.D. *400–1650*, Falcon Educational Book, London 1952 (and subsequent editions); T. Kuhn, *The Copernican*

This link was grounded, in particular, on the so-called '*impetus* theory': an alternative explanation to Aristotle's description of violent motion, based on the idea that a motive force (*vis motiva*, *impetus*) is transmitted by the mover to the object moved ensuring the continuation of the movement. This theory was applied by Buridan to the discussion of several phenomena: projectile motion, indeed, but also the description of the celestial movements, the problem of the acceleration of falling bodies, and the issue of the Earth's rotation around its own axis. Despite the fact that several authors before Buridan already outlined the main traits of the theory, the idea of *impetus* was so strongly connected to Buridan's name that the previous formulations were largely forgotten.[11]

In the reflections about the medieval contribution to modern science, the *impetus* theory played a key role. On the one hand, the theory was considered the example *par excellence* of a clear break between medieval science and Aristotelian thought. The *impetus* theory, in fact, disproved the Aristotelian idea of the medium as the cause of the continuation of the motion and identified the motive force impressed by the mover

---

Revolution, Harvard University Press, Cambridge (MA) 1957 (and subsequent editions); M. Clagett, *The Science of Mechanics in the Middle Ages*, The University of Wisconsin Press-Oxford University Press, Madison-London 1959; E.A. Moody, 'Galileo and his Precursors', in: C.L. Golino (ed), *Galileo Reappraised*, University of California Press, Berkeley 1966, 23–43; S. Drake, 'A Further Reappraisal of *impetus* Theory: Buridan, Benedetti and Galileo', *Studies in the History and Philosophy of Science*, 7 (1976), 319–336; E. Grant, *Physical Science in the Middle Ages*, John Wiley & Son, New York 1971 (and subsequent editions); W.A. Wallace, *Prelude to Galileo. Essays on Medieval and Sixteenth-century Sources of Galileo's Thought*, D. Reidel, Dordrecht 1981; W.A. Wallace, 'Galileo and Scholastic Theories of *impetus*', in: A. Maierù and A. Paravicini Bagliani (eds), *Studi sul XIV secolo in memoria di Anneliese Maier*, Storia e Letteratura, Roma 1981, 275–297; J.E. Murdoch, 'Pierre Duhem and the History of Late Medieval Science and Philosophy in the Latin West', in: R. Imbach and A. Maierù (eds), *Gli Studi di Filosofia Medievale fra Otto e Novecento*, Storia e Letteratura, Roma 1991, 253–302; D. Lindberg, *The Beginnings of Western Science: the European Scientific Tradition in Philosophical, Religious, and Institutional Context, 600 B.C. to A.D. 1450*, University of Chicago Press, Chicago 1992.

11 Various formulations of the idea that a motive force is transmitted by the mover to the object moved have been identified in late antiquity, in Arabic authors, and in medieval Latin thinkers. Since the beginning of the studies on the *impetus* theory, it has been remarked that John Philoponus, Avicenna, and Francis of Marchia already presented the idea of a motive force recalling Buridan's *impetus*. More recent research has widely revised and contributed to the studies on the *impetus*, showing how the idea of a *virtus derelicta* (to use Francis of Marchia's expressions) was spread, more or less consistently and in different ways, in medieval Latin thinkers before Francis of Marchia. See especially C. Schabel, 'Francis of Marchia's *virtus derelicta* and the Context of Its Development', *Vivarium* 44, 1 (2006), 41–80 (and the literature mentioned there). An interpretation of Francis of Marchia's *virtus derelicta*, also in comparison to Buridan's *impetus*, is found in F. Zanin, 'Francis of Marchia, *virtus derelicta*, and Modifications of the Basic Principles of Aristotelian Physics', *Vivarium* 44, 1 (2006), 81–95.

directly onto the moved (and not to the air around it) as the explanation of continued motion. In his commentary on the *Physics*, Buridan criticizes two explanations of projectile motion: (1) the 'antiperistasis', which Buridan correctly does not ascribe to Aristotle, based on the idea that the air occupies the void left behind by the thrown projectile, pushing it and guarantying the continuation of the movement,[12] and (2) another explanation, that Buridan rightly ascribes to Aristotle, according to which the mover moves both the projectile and the air around it. This moved air can move other portions of air close to it, guarantying the prosecution of the motion.[13] In his commentary on the *De caelo*, Buridan presents and rejects another Aristotelian explanation of violent motion, this time referred to the movement upwards and downwards of a projectile. According to this explanation, the air, having an intermediate nature between lightness and heaviness, can favor and guarantee the prolongation, at times, of the movement upwards or downwards of the projectile.[14]

---

12 'Prima est quam vocat per 'antiperistasim' quod proiectum exit velociter a loco in quo erat et natura, non permittens vacuum, mittit velociter aerem post replendum qui sic velociter motus et attingens proiectum pellit ipsum ultra et sic continue usque ad certam distantiam. Sed hanc conclusionem Aristoteles non approbat, sed reprobat …'. See John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, f. CXX^{rb}. Aristotle reports the theory of 'antiperistasis', without supporting it, in Arist., *Phys*, IV.8, 215a14–17. See also the passage quoted in the following footnote, *infra* footnote 13. Buridan criticizes the explanation based on 'antiperistasis' further on in the text, See John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, ff. CXX$^{rb–va}$.

13 'Alia opinio quam videtur Aristotele approbare est quod proiciens cum proiecto movet aerem proximum illi proiecto et ille aer velociter motus habet virtutem movendi illud proiectum, non sic intelligendo quod idem aer moveatur de loco proiectionis usque ad locum ad quem cessat proiectum, sed quod aer coniunctus proicienti movetur a proiciente et ille motus movet alium sibi proximum et ille alium usque ad certam distantiam. Primo ergo aer movet proiectum in secundum aerem et stans in tertium et sic deinceps. Ideo dicit Aristoteles quod non est unum movens, sed multa adinvicem sunt. Ideo etiam dicit quod non est motus continuus, sed consequenter entium aut tangentium'. See John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, f. CXX^{va}. This Aristotelian position is in Arist., *Phys*, VIII.10, 266b27–267a20. In this passage, Aristotle mentions again the theory of 'antiperistasis' and rejects it. Buridan criticizes this Aristotelian position further on in the text, see John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, f. CXX^{va}.

14 '… dicit enim in tertio *huius* quod aer, cum sit naturaliter gravis et levis, movetur cito et faciliter tam sursum quam deorsum, et cum impellitur sursum, retinet per suam naturam propter levitatem eius motum illum aliquamdiu, et ita etiam retinet motum deorsum propter suam gravitatem si impelleretur deorsum et sic tandem ipse ponit quod aer, impulsus cum proiecto sursum, movet proiectum sursum, et si grave movetur deorsum naturaliter, adhuc aer per suam gravitatem promovet motum ilium et facit motum velociorem'. See John Buridan, *Quaestiones super libros* De

Buridan's thesis on the continuation of the projectile motion is instead based on the idea that the projectile is directly moved by the mover thanks to an impressed motive force:

> Ideo videtur mihi dicendum quod motor movendo mobile imprimit sibi quendam impetum vel quandam vim motivam illius mobilis ad illam partem ad quam motor movebat ipsum, sive sursum, sive deorsum, sive lateraliter, vel circulariter.[15]

On the other hand, the *impetus* theory has been considered an anticipation of and contribution to some modern scientific theories: the quantity of motion, the principle of inertia, the unification of the mechanic system, i.e., an explanatory tool to unify the terrestrial and the celestial phenomena. Buridan, in fact, suggested that the *impetus* varies depending on the speed and the quantity of matter proper to the moved.[16] This suggestion has been read as a first intuition of the notion of 'quantity of motion'.[17] Moreover, Buridan ascribed to the *impetus* a non-dissipative nature. The resistance due to the medium (air, in the case of projectile motion) and the contrary inclination proper to the moved itself are the causes of the interruption of the motion. Without air

---

caelo et mundo, III, q. 2, ed. E.A. Moody, The Mediaeval Academy of America, Cambridge (MA) 1942, 241, ll. 1–11.

15 John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, f. CXX^{vb}.

16 'Si quis enim quaerat quare proicio longius lapidem quam plumam et ferrum ⟨vel⟩ plumbum manui proportionatum quam tandundem de ligno, dicam quod causa huius est quia receptio omnium formarum et dispositionum naturalium est in materia et ratione materie (marie *ed.*). Ideo quanto plus est de materia, tanto illud corpus plus potest recipere de illo impetu ⟨et⟩ intensius. Modo in denso et gravi ceteris paribus est plus de materia prima quam in raro et levi. Ideo densum et grave plus recipit de illo impetus et intensius …'. See John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, f. CXX^{vb}.

17 Buridan's *impetus* and Newton's *momentum* are connected by A.C. Crombie as follows: 'Thus, while Buridan preserved Aristotle's principle that motion was a process maintained by a motive power (*impetus*) which must accompany a moving body to keep it moving, he succeeded in combining this with the idea that force was something which *altered* motion and did not merely maintain it. This is the definition of force on which Newton was to build his mechanics. *Impetus* in Buridan's dynamics was, in fact, analogous to *momentum* in Newton's, and his measure by its velocity was similar to Newton's definition of *momentum* as the product of mass multiplied by velocity. The chief difference between the two was that Buridan said that, in the absence of external forces, *impetus* would persist indefinitely as well in a circle as in a straight line, whereas Newton's *momentum* would persist only in a straight line and would not require a force to bend it in a circle'. See A.C. Crombie, *Augustine to Galileo: the History of Science* A.D. *400–1650*, Falcon Educational Book, London 1952, 251.

resisting, and leaving aside the proper inclination (downwards) of the moving body, the *impetus* would be permanent.[18] Hence one could suggest that Buridan anticipated the idea of inertia.[19] The notion of '*impetus*' also played a role in Buridan's description of celestial motion. Buridan, in fact, described the motion of the celestial spheres as due to an *impetus* impressed by God, an *impetus* that, in the absence of obstacles, is destined to continue.[20] The use of the same physical principle, the *impetus*, to describe both terrestrial and celestial phenomena related to motion, then, led scholars to conclude that Buridan anticipated 'modern' physics by eliminating the Aristotelian distinction between a celestial mechanic and terrestrial mechanic.[21]

---

18 Several passages in different works testify that Buridan ascribes to the *impetus* a non-dissipative nature. See the following quotations: '... et in infinitum duraret impetus nisi diminueretur et corrumperetur a resistente contrario vel ab inclinante ad contrarium motum'. See John Buridan, *Quaestiones in* Metaphysicam *Aristotelis*, XII, q. 9, Paris 1518 [with incorrect date of original publication of 1588], repr. Frankfurt am Main 1964, f. LXXIII^{ra}; 'Et experimentum habetis, quod si mola fabri magna et valde gravis velociter moveretur a te, motu reversionis, et cessares eam movere, adhuc ab ipso impetu acquisito ipsa diu moveretur; imo tu non posses eam statim quietare, sed propter resistentiam ex gravitate illius molae, ille impetus continue diminueretur donec mola cessaret; et forte si mola semper duraret sine aliqua eius diminutione vel alteratione, et non esset aliqua resistentia corrumpens impetum, mola ab illo impetu perpetue moveretur'. John Buridan, *Quaestiones super libros* De caelo et mundo, II, q. 12, ed. E.A. Moody, The Mediaeval Academy of America, Cambridge (MA) 1942, 180, ll. 30–38; 'Tertia conclusio est quod ille impetus est res naturae permanentis ...'. See John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, f. CXXI^{ra}.

19 M. Clagett wrote: 'It can be scarcely be doubted that *impetus* is analogous to the later inertia, regardless of ontological differences'. M. Clagett, *The Science of Mechanics in the Middle ages*, The University of Wisconsin Press-Oxford University Press, Madison-London 1959, 525.

20 'Et etiam cum non appareat ex biblia quod sint intelligentiae quae appropriate moveant corpora caelestia, posset dici quod non apparet necessitas ponendi huiusmodi intelligentias, quia diceretur quod Deus quando creavit mundum, unumquemque orbium caelestium movit sicut sibi placuit et movendo eos impressit sibi impetus moventes eos absque hoc quod amplius moveret eos, nisi per modum generalis influentiae, sicut ipse concurrit coagendo ad omnia quae aguntur. Sic enim septima die requievit ab omni opere ... Et illi impetus impressi corporibus caelestibus non postea remittebantur vel corrumpebantur, quia non erat inclinatio corporum caelestium ad alios motus, nec erat resistentia quae esset corruptiva vel repressiva illius impetus'. See John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, VIII, q. 12, Paris 1509, repr. Frankfurt am Main 1964, ff. CXX^{vb}–CXXI^{ra}.

21 As Duhem remarked: 'Si l'on voulait, par une ligne précise, séparer le règne de la Science antique du règne de la Science moderne, il la faudrait tracer, croyons-nous, à l'instant où Jean Buridan a conçu cette théorie, à l'instant où l'on a cessé de regarder les astres comme mus par des êtres divins, où l'on a admis que les mouvements célestes et les mouvements sublunaires dépendaient d'une même Mécanique. Cette Mécanique, à la fois céleste et terrestre, à laquelle Newton devait donner la forme que nous admirons aujourd'hui, la voici, d'ailleurs, qui, dès le XIV^{e} siècle, tente de se constituer'. See P. Duhem, *Études sur Léonard de Vinci*, 3, Hermann, Paris 1913, IX–X.

These readings and interpretations of Buridan's *impetus* theory naturally led to the identification of Buridan as a precursor of Galileo Galilei, the 'father of modern science'. Even though scholarship has revised and put into historical perspective Buridan's role in the birth of modern science,[22] the focus on the *impetus* theory had two important consequences: first, it attributed to Buridan a central place in the development of late medieval natural philosophy; and second, it drew attention to natural philosophy as one of the most important branches of philosophy Buridan addressed during his long career as a Master of Arts at the University of Paris.

1.3.2. *The Rise of Logic*

A few decades later, in the context of the 'logical turn' in the historiography of medieval philosophy, the focus of Buridan scholarship shifted from the pioneering studies of Duhem and Maier to another field of philosophy: logic. From the end of the 1960s, thanks especially to the works of Norman Kretzmann, Jan Pinborg, Lambertus M. de Rijk, and Sten Ebbesen, a very strong emphasis was put on Buridan's contributions to logic. A product and milestone of this branch of scholarship is the book *The Logic of John Buridan*, edited by Jan Pinborg in 1976.[23]

The importance of Buridan's logic is now widely recognized. Buridan not only commented on Aristotle's *Organon*, but also produced a monumental work (*Summulae de dialectica*) that seems to elaborate on Peter of Spain's *Summulae logicales*. This work is considered an original masterpiece, bringing innovations in logic. It was extremely successful in the universities of the later Middle Ages.[24] Buridan is commonly known, also among non-specialists, for his supposition theory, and his discussion of the Liar paradox. The interest in Buridan's logic is testified by the editorial and translating work that concerned his production in the field of logic and by the large amount of literature on this topic. It is symptomatic that one of the few and most recent monographs on Buridan, i.e., G. Klima's work, simply entitled *John Buridan*, is almost completely devoted to Buridan's logic.[25]

---

22 See the debate in the literature quoted above, *supra*, footnote 10 .

23 J. Pinborg (ed), *The Logic of John Buridan. Acts of the Third European Symposium on Medieval Logic and Semantics: Copenhagen, 16–21 November 1975*, Museum Tusculanum Press, Copenhagen 1976.

24 The *Summulae de dialectica* (nine treatises) have been translated by G. Klima, see John Buridan, *Summulae de dialectica*, transl. by G. Klima, Yale University Press, New Haven (CT), 2011. A critical edition of the Latin text of the *Summulae* is in progress in Brepols' 'Artistarium' series.

25 For an overview of Buridan's contributions to logic, a listing of editions of Buridan's logical writings, and translations and literature on Buridan's logic, see J. Zupko, 'John Buridan', *The Stanford*

1.3.3. *A Broader Interest in Buridan's Philosophy: Metaphysics, Ethics, and Natural Philosophy*

In 2001, Hans Thijssen and Jack Zupko published a collection of essays devoted to several aspects of Buridan's philosophy, especially metaphysics and natural philosophy, but also ethics. The aim of the editors was to assemble some of the results of the emergent scholarship devoted to Buridan's non-logical *corpus*.[26] Two years later, Jack Zupko published an important monograph on Buridan, titled *John Buridan. Portrait of a Fourteenth-century Arts Master*, focusing not only on logic, but also on metaphysics, natural philosophy (especially on Buridan's theory of the soul), and on ethics.[27] These works marked a new trend in Buridan scholarship: not only logic, but also the remaining sections of Buridan's vast production finally attracted the attention it deserved.

As far as Buridan's metaphysics is concerned, several aspects have been studied until now: the scope and the subject-matter of metaphysics, the problem of universals, the theory of knowledge and the nature of science, the problem of the ontological status of accidental being, the theory of relation, the issue about being and essence, the relationship between metaphysics and theology.[28] Neverthless, a complete critical edition of Buridan's commentary on the *Metaphysics* is still lacking.[29]

Encyclopedia of Philosophy (Spring 2014 Edition), Edward N. Zalta (ed), URL = http://plato.stanford.edu/archives/spr2014/entries/buridan/. For a broader outline of Buridan's logic see J. Zupko, *John Buridan: Portrait of a Fourteenth-century Arts Master*, University of Notre Dame Press, Notre Dame (IN) 2003, 3–135, and Klima's monography, i. e., G. Klima, *John Buridan*, Oxford University Press, Oxford 2009. Other titles of works on Buridan's logic are listed in O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, cit., 134–142.

26 See J.M.M.H. Thijssen and J. Zupko, *The Metaphysics and Natural Philosophy of John Buridan*, Brill, Leiden 2001. About the main aim of the book, see *ibidem*, 'Preface', VII, and *ibidem*, 'John Buridan, Metaphysician and Natural Philosopher. An Introductory Survey', IX–XVII.

27 See J. Zupko, *John Buridan: Portrait of a Fourteenth-century Arts Master*, University of Notre Dame Press, Notre Dame (IN) 2003.

28 On these topics, see Kok's description and bibliographical indications in F. Kok, *A Faithful Philosopher*, cit., 24–25, and footnotes 112–117. For a richer outline of Buridan's metaphysics, see the details in ch. 2 of Kok's thesis (*ibidem*, 39–89), recently published as Ead., 'John Buridan's Commentary on the *Metaphysics*', in: F. Amerini and G. Galluzzo (eds), *A Companion to the Latin Medieval Commentaries on Aristotle's Metaphysics*, Brill, Leiden 2014, 495–549. In addition to Kok's thesis, see the following books that have extensively addressed Buridan's metaphysics: A. Ghisalberti, *Giovanni Buridano: dalla metafisica alla fisica*, cit; R. Schönberger, *Relation als Vergleich. Die Relationstheorie des Johannes Buridan im Kontext seines Denkens und der Scholastik*, Brill, Leiden 1994; G. Krieger, *Subjekt und Metaphysik Die Metaphysik des Johannes Buridan*, Aschendorff, Münster 2003.

29 For an account of the different versions of Buridan's commentary on the *Metaphysica*, see F. Kok, *A Faithful Philosopher*, cit., 7–9. Kok followed Michael's account in B. Michael, op. cit., 792–813 updating

Buridan's ethics attracted scholarly attention especially on the topic of the free will, in connection with the famous story of the dithering donkey, actually a dog in Buridan's writings.[30] Scholarship has also paid attention to the long-standing problem of the relationship between the will and the intellect, the description of practical reason, and the topic of virtue.[31] Just like Buridan's commentary on the *Metaphysics*, his questions on the *Nicomachean Ethics* have not been critically edited yet.[32]

---

it with the results of more recent research. Concerning the editions of Buridan's *Metaphysica*, the text commonly read is the sixteenth-century printed edition of the *ultima lectura*, see John Buridan, *Quaestiones in* Metaphysicam *Aristotelis*, Paris 1518, repr. Frankfurt am Main 1964 [with incorrect date of original publication of 1588]. Assuming these commentaries are authentic, L.M. de Rijk published an edition of what he called the *Lectura Erfordiensis*, see John Buridan (?), *Lectura Erfordiensis in* I–VI Metaphysicam, ed. by L.M. de Rijk, in: Johannes Buridanus, Lectura Erfordiensis in I–VI Metaphysicam *together with the 15th-century* Abbreviatio Caminensis. *Introduction, Critical Edition and Indexes*, Turnhout, Brepols 2008. Recently, M. Mansfeld has prepared a critical edition of Buridan's questions on the seventh book of the *Metaphysica*. This edition is part of Mansfeld's Ph.D. thesis defended in 2015 at the University of Silesia in Katowice, see John Buridan, *Quaestiones in* VII Metaphysicam, ed. by M. Mansfeld, in: *Quaestiones in duodecim libros* Metaphysicorum *Aristotelis Jana Burydana (*VII *księga). Edycja krytyczna i analiza historyczno-filozoficzna*, unpublished Ph.D. thesis, University of Silesia, Katowice 2015.

30 On Buridan's donkey, see B. Michael, op. cit., 297–300; some pages of the introduction of Patar's edition in John Buridan, *Quaestiones et Expositiones super libros* De caelo et mundo, ed. by B. Patar, in: *Ioannis Buridani Expositio et Quaestiones in Aristotelis* De caelo, Éditions de l'Institut supérieur de philosophie-Peeters, Louvain-la-Neuve-Paris 1996, 20–30; G. Krieger, 'Bietet 'Buridan's Esel' den Schlüssel zum Verständnis der Philosophie des Johannes Buridanus?', in: E.P. Bos and H.A. Krop (eds), *John Buridan: A Master of Arts. Some Aspects of His Philosophy*, Ingenium Publishers, Nijmegen 1993, 121–140, and A. Ghisalberti, 'L'asino di Buridano. Libertà e finalismo in un maestro del secolo XIV', *Ou. Riflessioni e provocazioni* 1 (1996), 45–54.

31 For a summary of Buridan's ethics and some bibliographical indications see again J. Zupko, 'John Buridan', *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed), URL = http://plato.stanford.edu/archives/spr2014/entries/buridan/. Some of the topics mentioned are treated by Zupko in his monograph, see J. Zupko, *John Buridan: Portrait of a Fourteenth-century Arts Master*, cit., 227–270. A listing of bibliography on Buridan's ethics is also in O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, cit., 158–160. A relevant text is G. Krieger, *Der Begriff der praktischen Vernunft nach Johannes Buridanus*, Aschendorff, Münster 1986.

32 There is an early modern printed edition, namely John Buridan, *Quaestiones super decem libros* Ethicorum *Aristotelis ad Nicomachum*, Paris 1513, repr. Frankfurt am Main 1968. A translation (based on a revised version of the 1513 print) of book X is available, see John Buridan, *Quaestiones in* X Ethicam, transl. by J. Kilcullen, in: 'Jean Buridan, Questions on Book X of the *Ethics*', in: A.S. McGrade, J. Kilcullen and M. Kempshall (eds), *The Cambridge Translations of Medieval Philosophical Texts. Volume II: Ethics and Political Philosophy*, Cambridge University Press, Cambridge-New York 2001, 498–586.

1.3.3.1. A New Interest in Buridan's Natural Philosophy

The late medieval *scientia naturalis*, also called *physica*, or *philosophia naturalis* can be defined as the field of studies devoted to natural phenomena, broadly considering the characteristics of celestial and terrestrial objects, the nature and functions of the soul, and the corporeal properties of living organisms, both animal and human. In the framework of the medieval universities, this field of studies mostly coincided with the task of commenting on Aristotle's *libri naturales*, most prominently on the *Physica*, the *De caelo*, the *Meteorologica*, the *De generatione et corruptione*, the *De anima*, the so-called *Parva naturalia*, and the *De animalibus*. These works, translated into Latin, entered the *curriculum* of the Arts faculties with pervasiveness from the twelfth century onwards.

Buridan's works on natural philosophy are a substantial part of his literary production. As the volume edited by Thijssen and Zupko shows, the importance of natural philosophy was recognized by a new generation of scholars who, after Duhem and Maier, renewed interest in Buridan's works on the *scientia naturalis*.[33] Important texts of Buridan started to be critically edited, and Buridan's theories on the nature of the soul and on the constitution of the inorganic and organic world became the object of scholarly attention.

More or less at the same time as the rise of philosophy of mind as a branch in contemporary philosophy, Buridan's theory on the soul acquired a central place in Buridan scholarship.

In the framework of the medieval *philosophia naturalis*, the science of the soul, a field of knowledge we refer to as 'psychology', occupies an important place. Aristotle's *De anima*, most importantly, provided medieval authors with the opportunity to inquire into 'mental', 'sensitive' and 'physiological' phenomena related to our 'internal' world as well as to examine the relationship between this 'inner' world and the external world. Buridan produced both expositions and questions on Aristotle's *De anima*, and he seems to have lectured three times on this text. For, a version of his *De anima* commentary is labelled the 'tertia sive ultima lectura' in the manuscripts. An earlier version (sometimes called 'secunda lectura' but more correctly to be labelled the 'non ultima lectura') is also attributed to Buridan and contains a slightly different version of the commentary. Buridan's name has also been connected to yet another *De anima* commentary, labelled 'prima lectura' by its editor, Benoît Patar. In a recent article, Sander de Boer and Paul Bakker argued that the arguments in favour

33 See also J.M.M.H. Thijssen, 'Late medieval natural philosophy', *Recherches de Théologie et Philosophie Médiévales*, *67*, 1 (2000), 158–190.

of Buridan's authorship of this (anonymous) text are not convincing. Besides the manuscript versions, there is also another version of Buridan's *De anima*, not precisely coinciding with any of the aforementioned manuscripts versions, which is contained in an early modern printed edition: the so-called 'Lokert edition', by the name of its editor, George Lokert (d. 1547). The panorama of commentaries of (or attributed to) Buridan on Aristotle's *De anima* is therefore complicated, due also to the fact that, both the 'second' and the third lecture are contained in a considerable number of manuscripts.[34] The so-called 'prima lectura' has been edited and then translated into French by Benoît Patar. This work remains a useful tool to study late medieval views on the soul, but the study by De Boer and Bakker should invite scholars to be careful in referring to this work as a work of Buridan.[35] The editions currently used by scholars to study Buridan's views on the soul are Jack Zupko's edition of book III (*tertia lectura*) and Peter Sobol's edition of book II (*tertia lectura*).[36] A complete edition of Buridan's *De anima* is currently in preparation.[37]

The contents of Buridan's *De anima* opened several interpretative debates in recent scholarship. The following issues had a certain fortune: the epistemological status of the science of the soul and its relationship with other disciplines such as metaphysics and theology; the nature of the soul and the limits of human possibility of knowing it; the debate on the unity of soul; issues on self-knowledge

34 For a detailed account of the versions of Buridan's *Quaestiones De anima*, see B. Michael, op. cit., 684–735 and S.W. de Boer and P.J.J.M. Bakker, 'Is John Buridan the Author of the Anonymous *Traité de l'âme* Edited by Benoît Patar?', *Bulletin de Philosophie Médiévale*, 53 (2011), 283–332. This article has put under discussion Patar's attribution to Buridan of the so-called 'prima lectura'. The early modern edition was printed twice, see John Buridan, *Quaestiones in libros* De anima, Paris 1516 and 1518.

35 Anonymous, *Quaestiones* De anima, ed. by B. Patar, in: *Le* Traité de l'âme *de Jean Buridan* (prima lectura), *Edition, étude critique et doctrinale*, Editions de l'institut superieur de Philosophie-Editions du Preambule, Louvain-La-Neuve-Longueil 1991. The translation is Anonymous, *Quaestiones* De anima, ed. and transl. by B. Patar, in: *Jean Buridan. Commentaire et Questions sur le* Traité de l'âme: *Introduction, traduction et notes*, Les Presses philosophiques, Longueuil 2004. (Note that Patar, of course, does not consider the work 'anonymous', but I personally opt to follow De Boer and Bakker's carefulness in attributing the work to Buridan).

36 See John Buridan, *Quaestiones* De anima, III, *tertia lectura*, ed. by J. Zupko, in: *John Buridan's Philosophy of Mind. An Edition and Translation of Book III of his Questions on Aristotle's* De Anima *(Third redaction), with Commentary and Critical and Interpretative Essays*, unpublished Ph.D. thesis, Cornell University, Ithaca 1989 and John Buridan, *Quaestiones* De anima, II, *tertia lectura*, ed. by P. Sobol, in: *John Buridan on the Soul and Sensation. An Edition of Book II of his Commentary on Aristotle's Book on the Soul with an Introduction and a Translation of Question 18 on Sensible Species*, unpublished Ph.D. thesis, Indiana University, Bloomington 1984. I base my analysis of the texts of Buridan's *De anima*, book II, on this edition. Incidentally, I will indicate some corrections and adapt punctuation.

37 See http://www.buridanica.net.

and self-perception, the topic of intentionality, and reflections on the so-called 'faculties' of the soul.[38] Above all, an intense debate arose from Buridan's questions 3–6 of the third book, identified as the 'treatise on the human intellect'. Especially Buridan's theory on the immateriality and immortality of the human soul attracted scholarly attention. It was asked whether Buridan was faithful to the doctrine of the immateriality and immortality of the soul, or whether he embraced a materialistic view instead. Even though Olaf Pluta's clear-cut attribution to Buridan of the materialistic view of the soul has been met with severe criticism, this issue still remains controversial.[39]

---

38 The richest accounts on Buridan and the science of the soul are provided in Zupko's monograph, see J. Zupko, *John Buridan: Portrait of a Fourteenth-century Arts Master*, cit., 164–226, and in S.W. de Boer, *The Science of the Soul. The Commentary Tradition on Aristotle's* De anima, *c. 1260–c. 1360*, Leuven University Press, Leuven 2013. Scholarship widely analyzed also Buridan's epistemology, by referring especially to the commentary on the *De anima*, but also to other works, such as the commentary on the *Metaphysica* and on the *Physica*. Buridan's theory of knowledge has been extensively treated and interpreted by Zupko, see J. Zupko, *John Buridan: Portrait of a Fourteenth-century Arts Master*, cit., 183–202, and, more recently, by J. Biard, *Science et nature. La théorie buridanienne du savoir*, Vrin, Paris 2012.

39 The scholars most involved in debating this issue, and with opposed views, have been O. Pluta and J. Zupko. For Pluta's position see O. Pluta, 'How Matter Becomes Mind: Late-Medieval Theories of Emergence', in: H. Lagerlund (ed), *Forming the Mind. Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, Springer, Dordrecht 2007, 149–168; Id., 'Persecution and the Art of Writing. The Parisian Statute of April 1, 1272, and Its Philosophical Consequences', in: P.J.J.M. Bakker (ed), *Chemins de la pensée médiévale. Études offertes à Zénon Kaluza*, Brepols, Turnhout 2002, 563–585; Id., 'The Transformations of Alexander of Aphrodisias' Interpretation of Aristotle's Theory of the Soul', in: M. Pade (ed), *Renaissance Readings of the* corpus aristotelicum: *Proceedings of the Conference held in Copenhagen, 23–25 April 1998*, Museum Tusculanum Press, Copenhagen 2001, 147–165. For Zupko's position see J. Zupko, 'How are the Souls Related to Bodies? A Study of John Buridan', *Review of Metaphysics 46 (1993)*, 575–601; Id., 'John Buridan on the Immateriality of the Intellect', in: H. Lagerlund (ed), *Forming the Mind. Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, Springer, Dordrecht 2007, 129–147; Id., 'On Buridan's Alleged Alexandrianism: Heterodoxy and Natural Philosophy in Fourteenth-century Paris', *Vivarium* 42, 1 (2004), 43–57. The topic has been broadly addressed also by H. Lagerlund, especially concerning the specific aspect of the relationship between body and soul, see H. Lagerlund, 'John Buridan and the Problem of Dualism in the Early Fourteenth century', *Journal of the History of Philosophy* 42, 4 (2004), 369–387; Id., 'Making Aristotle Modern: John Buridan on Psychology and Language', in: P.J.J.M. Bakker and J.M.M.H. Thijssen (eds), *The Tradition of Commentaries on Aristotle's* De Anima, Ashgate Studies in Medieval Philosophy, Aldershot 2007, 69–85; Id., 'The Mind/Body Problem and Late Medieval Conceptions of the Soul', in: H. Lagerlund (ed), *Forming the Mind. Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, Springer, Dordrecht 2007, 1–15; Id., 'The Unity of Efficient and Final Causality: the Mind/Body Problem Reconsidered', *British Journal of the History of Philosophy* 19, 4 (2011), 587–603.

Finally, shifting back from the third to the second book of the *De anima* (and with a look to the material from the commentary on the *Parva naturalia*) studies on Buridan's conception of sense cognition and descriptions of the internal and external senses have recently increased.[40]

The present thesis will consider some parts of Buridan's commentary on the *De anima*, especially as far as the second book and some 'physiological' topics are concerned.

Nevertheless, natural philosophy has a broader range, including much more than issues concerning the soul. Moving from the internal sphere of the soul to the external world of natural phenomena, Buridan scholars also paid attention to Buridan's writings on Aristotle's *De generatione et corruptione* and *Physica*.

In recent years, the first critical edition of Buridan's questions on the *De generatione et corruptione* appeared.[41] Buridan's commentary on *De generatione et corruptione* contains reflections on capital concepts and issues of Western thought such as the generation and corruption of physical entities, of course, but also on other important topics such as the change of matter, the ontological features of growth and nutrition, the elemental qualities of the physical world, the relationship between the elements and the mixture, and the characteristics of the mixture itself. These concepts and issues in Buridan's thought have not yet been completely and thoroughly analyzed.[42] The present thesis will deal with an aspect of the theory of mixture as it is contained in Buridan's commentary on the *De generatione et corruptione*.

While an edition of Buridan's commentary on the *De caelo* was already available since the 1940s,[43] the complete critical edition of Buridan's *Physica* is still in progress.

---

40 See *infra*, footnote 47 and *infra* 50.

41 See John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros *De generatione et corruptione* Aristotelis, *A Critical Edition with an Introduction*, Brill, Leiden 2010.

42 A list of secondary literature on Buridan's *De generatione et corruptione* up to 2001 is available in O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, cit., 147–148.

43 See John Buridan, *Quaestiones super libros* De caelo et mundo, ed. E.A. Moody, The Mediaeval Academy of America, Cambridge (MA) 1942. In 1983, A. Ghisalberti translated Moody's edition in Italian, with a broad introduction focused on the relationship between Buridan, Aristotelian cosmology, and modern science, see John Buridan, *Quaestiones super libros* De caelo et mundo, transl. by A. Ghisalberti, in: *Giovanni Buridano*. Il cielo e il mondo. *Commento al trattato* Del cielo *di Aristotele*, Rusconi, Milano 1983. An edition of both Buridan's exposition and questions on the *De caelo* was published by B. Patar, see John Buridan, *Quaestiones et Expositiones super libros* De caelo et mundo, ed. by B. Patar, in: *Ioannis Buridani Expositio et Quaestiones in Aristotelis* De caelo, Éditions de l'Institut supérieur de philosophie-

In 2015, books I and II of Buridan's *Quaestiones super octo libros Physicorum Aristotelis (secundum ultimam lecturam)* were edited and published, followed in 2016 by books III and IV.[44] In this case, the edition is enriched by a long 'Guide to the Text' by Edith Sylla,[45] who provides an account of both the contents of the questions and the relationship between Buridan's teachings and that of his predecessors, contemporaries, and followers. Sylla's goal is to distance herself from the aforementioned, persistent trend in Buridan's scholarship to study Buridan as a precursor of modern scientific theories. As Sylla rightly argues, this trend detaches Buridan from his own time and risks to misinterpret his thought, leading, at the same time, to overestimate his alleged 'modern' theories and to underestimate or simply neglect the rest of his philosophical production. Moreover, Sylla criticizes the fact that scholarship has concentrated on those of Buridan's teachings considered 'relevant to contemporary philosophy'. Sylla's aim, on the contrary, is to: '… present Buridan's text on its own terms and in relation to its own time and place'.[46] In my opinion, Sylla's way of looking at Buridan's natural philosophy is undeniably advantageous. First, it encourages searching into *all* the fields of Buridan's natural philosophy, leading to a broader and more comprehensive understanding of Buridan's thought. Second, it provides a more realistic picture of Buridan's philosophy: 'Buridan the fourteenth-century Parisian Master of Arts', instead of 'Buridan the precursor' and 'Buridan the yardstick for contemporary philosophical debates'. Third, this view allows us to enlarge our knowledge of the developments of natural philosophy in Buridan's time, also in its relationship with

---

Peeters, Louvain-la-Neuve-Paris 1996. Nevertheless, Patar's attribution of the exposition to Buridan seems to be mistaken, see O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, IV, Brepols, Turnhout 2001, 146.

Note that Buridan is also the author of a commentary on Aristotle's *Meteorologica* (both exposition and questions). See O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, cit., 148–149 and B. Michael, op. cit., 649–675. The edition of book I (*Quaestiones*) is John Buridan, *Quaestiones super tres libros* Metheororum, I, ed. by S. Bages in: *Les* Questiones super tres libros *Metheororum* Aristotelis *de Jean Buridan. Étude suivie de l'édition du livre* I, unpublished Ph.D. thesis, École nationale des chartes, 1986.

44 See John Buridan, *Quaestiones* in Physicam, I–II, *ultima lectura*, ed. by M. Streijger and P.J.J.M. Bakker, in: *John Buridan*, Quaestiones super octo libros *Physicorum* Aristotelis (secundum ultimam lecturam): *Libri* I–II, Brill, Leiden 2015 and John Buridan, *Quaestiones* in Physicam, III–IV, *ultima lectura*, ed. by M. Streijger and P.J.J.M. Bakker, in: *John Buridan*, Quaestiones super octo libros *Physicorum* Aristotelis (secundum ultimam lecturam): *Libri* III–IV, Brill, Leiden 2016.

45 See E. Sylla, 'Guide to the Text', in: M. Streijger and P.J.J.M. Bakker (eds), John Buridan, *Quaestiones super octo libros Physicorum Aristotelis (secundum ultimam lecturam): Libri* I–II, Brill, Leiden 2015, XLIII–CLXXXVI.

46 See *ibidem*, XLIII–XLVIII.

other disciplines: the study of Buridan's teachings 'on its own terms and in relation to its own time and place' improves our knowledge of *that* time and *that* place.

This research orientation is particularly appropriate to approach the most neglected area of Buridan's natural philosophy: the commentaries on Aristotle's *Parva naturalia* and the philosophical issues discussed in these works. The supposed lack of originality of these works could lead us to put Buridan's *Parva naturalia* aside. More in general, it should be remarked that the entire *corpus* of medieval commentaries on Aristotle's short treatises on nature has been neglected and that the interest in this tradition is, in fact, only recent.[47] But the study of these texts, containing Buridan's theories on the living organism, would in fact significantly enrich our knowledge of Buridan's natural philosophy in its entirety, and help us to attain a broader understanding of the late medieval 'science'.

Buridan wrote both *expositiones* and *quaestiones* on Aristotle's *Parva naturalia*, transmitted in manuscripts and in an early modern printed edition. Different versions of these commentaries have been identified. The most extended account of the versions of Buridan's *Parva naturalia* is found in Bernd Michael's Ph.D. dissertation of 1985. Concerning the questions, he identified an A version, transmitted in a few manuscripts, a B version and a B' version. Most of the known manuscripts contain the B version, while the B' version, according to Michael, is contained in the Lokert edition, the same early modern printed edition containing a version of Buridan's *De anima*.[48] In his recent Ph.D. thesis, Maciej Stanek has presented a slightly different view of Buridan's versions of the *Parva naturalia*. Stanek claims that the A version

47 See especially P. de Leemans, '*Parva naturalia*, Commentaries on Aristotle's', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 917–923; C. Grellard and P.-M. Morel, *Les* Parva Naturalia *d'Aristote. Fortune antique et médiévale*, Publications de la Sorbonne, Paris 2010; G. Federici Vescovini, 'La tradizione dei *Parva naturalia* nell'insegnamento universitario medievale (secoli XIII e XIV)', in: C. Crisciani, R. Lambertini and R. Martorelli Vico (eds), Parva naturalia. *Saperi medievali, natura e vita*, Istituti Editoriali e Poligrafici Internazionali, Pisa-Roma 2004, 125–141; M. Dunne, 'Thirteenth and Fourteenth-century Commentaries on the *De longitudine et brevitate vitae*', *Early Science and Medicine*, 8, 4 (2003), 320–335. A catalogue of medieval questions on *De sensu et sensato*, *De memoria et reminiscentia*, and *De somno et viglia* has been recently published, see S. Ebbesen, C. Thomsen Thörnqvist and V. Decaix, 'Questions on *De sensu et sensato*, *De Memoria* and *De Somno et Vigilia*', *Bulletin de philosophie médiévale* 57 (2015), 59–115. Note that a book by B. Bydén and F. Radovic (eds), *Supplementing the Science of the Soul. The* Parva naturalia *in Greek, Arabic, Latin and Hebrew Scholasticism* is forthcoming. A large-scale research project on the medieval commentaries on the first treatises of the *Parva naturalia* is currently carried out by the group 'Representation and Reality: Historical and Contemporary Perspectives on the Aristotelian Tradition' of the University of Gothenburg.

48 See B. Michael, op. cit., 736–780.

is not by Buridan and must be ascribed to an (anonymous) author who followed Buridan's teachings. Stanek further explains that Buridan's questions on the *Parva naturalia* are extant in two versions, labelled B and C. What Stanek calls the B version almost coincides with Michael's B version. According to Stanek, this B version is contained in thirteen manuscripts and, in this case, there is no reason to doubt Buridan's authorship. Stanek's C version is extant in one manuscript, Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 2880 (ff. 66^{ra}–86^{vb}), and is composed only by questions on D*e somno et vigilia*, D*e morte et vita*, D*e iuventute et senectute* and D*e longitudine et brevitate vitae*. Stanek connects this version to George Lokert's printed edition. With regard to the relationship between the B and C versions, Stanek underlines that the two versions are closely connected from a doctrinal point of view; the only differences, according to Stanek, are found in the *rationes* and the *ad rationes* parts, where C presents a more elaborated text than B.[49]

Until now, these treatises had attracted scholarly attention only a few times and, only very recently, the interest in Buridan's *Parva naturalia* started increasing.[50] Most importantly, thanks to the work of Maciej Stanek, the first critical edition of Buridan's *Parva naturalia* has been prepared. This edition will probably be published in 2017.[51] Hopefully, Stanek's edition will open a new trend in Buridan scholarship aimed at considering in detail Buridan's teachings on natural philosophy as it is contained

---

49 See John Buridan, *Quaestiones in libros* Parva naturalia, ed. by M. Stanek, in: *Jana Burydana. Quaestiones super* Parva naturalia *Aristotelis. Edycja krytyczna i analiza historyczno-filozoficzna*, unpublished Ph.D. thesis, University of Silesia, Katowice 2015, X–XI, XXIX–XXXVIII.

50 See P. Sobol, 'Sensations, Intentions, Memories and Dreams', in: J.M.M.H. Thijssen and J. Zupko (eds.), *The Metaphysics and Natural Philosophy of John Buridan*, Brill, Leiden 2001, 183–198; C. Grellard, 'La reception médiévale du D*e somno et vigilia*. Approche anthropologique et épistemologique du rève, d'Albert le Grand à Jean Buridan', in: C. Grellard and P.-M. Morel (eds), *Les* Parva Naturalia *d'Aristote. Fortune antique et médiévale*, Publications de la Sorbonne, Paris 2010, 222–237. At p. 234, footnote 29, Grellard thanks Patar for having provided him with a transcription of Buridan's exposition on the D*e somno et vigilia*; See also S.W. de Boer, 'Buridan on the Internal Senses', *Documenti e studi sulla traduzione filosofica medievale*, XXV (2014), 403–421. Within the project 'Representation and Reality: Historical and Contemporary Perspectives on the Aristotelian Tradition', V. Decaix works on the sub-project 'Embodied souls and animated bodies: naturalization of intentionality in the Latin commentaries of the *Parva naturalia* (13th–15th Centuries)' in which she takes into account the first treatises of Buridan's *Parva naturalia*. See *supra*, footnote 47.

51 I am very grateful to the author for allowing me to use his edition for the purposes of this thesis. When necessary, I will correct Stanek's text, sometimes by comparing it to ms. Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 11.575 (V). I will also adapt the punctuation. When relevant for the doctrinal contents of my discussion, I will compare the manuscript version in B (according to Stanek's edition) with the Lokert edition, i.e., John Buridan, *Quaestiones in libros* Parva naturalia, Paris 1516 and 1518.

in the *Parva naturalia*. This text is in fact very rich and offers the opportunity of discovering new aspects of Buridan's psychological theories and of examining some of the more strictly biological aspects of Buridan's natural philosophy, useful to provide an account of Buridan's conception of the human body. Buridan, in fact, commented on both the so-called 'psychological' treatises of the *Parva naturalia* (*De sensu et sensato*, *De memoria et reminiscentia*, and *De somno et vigilia*) and on the 'physiological' treatises (*De longitudine et brevitate vitae* and *De morte et vita*).[52] The present thesis will take into account some of Buridan's questions on the *Parva naturalia*, both the psychological and the physiological treatises.[53]

Buridan dealt with natural philosophical topics in two other works: the commentaries on the pseudo-Aristotelian *Physiognomia* and on pseudo-Albertus Magnus' treatise *De secretis mulierum*. Both the pseudo-Aristotelian *Physiognomia* and the *De secretis mulierum* cover crucial topics of ancient and medieval natural science. In particular, it has been recognized that the Latin medieval tradition progressively upgraded physiognomy to a 'scientific branch of natural philosophy'[54] and that the *De secretis mulierum* interlaced challenging natural philosophical and medical topics for the education of a learned public.[55] This makes the study of these works essential to a complete description of Buridan's conception of the living organism. Buridan wrote both expositions and questions on the *Physiognomia*.[56] An edition of the questions is

52 For this distinction, see P. de Leemans, '*Parva naturalia*, Commentaries on Aristotle's', cit., 917.

53 Buridan commented also on Aristotle's *De motibus animalium*, a text closely linked to the *Parva naturalia*. Specifically, we have an *expositio*, edited in 1967, see John Buridan, *Expositiones* De motibus animalium, ed. by F. Scott and H. Shapiro, in: 'Jean Buridan's *De motibus animalium*', *Isis*, 58 (1967), 533–552. For the link between the *De motu animalium* and the *Parva naturalia* see P. De Leemans, '*Parva naturalia*, Commentaries on Aristotle's', cit., 917–918; Id., 'Medieval Latin Commentaries on Aristotle's *De motu animalium*', *Recherches de Theologie et Philosophie Medievales*, 67, 2 (2000), 272–360, and M. Rashed, 'Agrégat de parties ou *vinculum substantiale*? Sur une hésitation conceptuelle et textuelle du *corpus* aristotélicien', in: A. Laks and M. Rashed (eds), *Aristote et le mouvement des animaux. Dix études sur le* De motu animalium, Presses Universitaires du Septentrion, Villeneuve d'Ascq 2004, 185–202.

54 J. Ziegler, 'Philosophers and Physicians on the Scientific Validity of Latin Physiognomy, 1200–1500', *Early Science and Medicine*, 12, 3 (2007), 285–312, esp. 287.

55 See Pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, in: *El* De secretis mulierum *atribuido a Alberto Magno: estudio, edición crítica y traducción*, Brepols, Turnhout 2012, 42–45. See also Pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, in: *Women's secrets: a Translation of pseudo-Albertus Magnus'* De secretis mulierum *with commentaries*, State University of New York Press, Albany 1992, 14–16.

56 See B. Michael, op. cit., 783–788. Michael identifies two different redactions of the *quaestiones*. He expresses doubts on the authenticity of the text contained in the Vatican manuscripts, while he explains that, on the basis of the contents, Buridan's authorship of the questions contained in the

currently in preparation.[57] The physiognomic tradition, considering the 'semiotics of the body',[58] is important to understand aspects of Buridan's description of the corporeal dimension of human beings, also in connection to medical inquiries.[59] Buridan also wrote eight questions on pseudo-Albertus Magnus' treatise *De secretis mulierum*, focused on the theory on human generation. The attribution of these questions to Buridan will be discussed in the following chapter of this thesis and the first critical edition of the questions will be provided in Appendix A. A close examination of this work will make it possible to outline Buridan's theory of human generation, traditionally an important aspect of natural philosophy in connection with medical theories.[60]

Oxford manuscripts should be maintained. See *ibidem*, 787–788. On Buridan's *Pysiognomia*, see also O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, cit., 155–156.

57 This is the edition project announced by J. Biard and C. Grellard: http://ockham.free.fr/actualites.html. L. Devriese, at the KU Leuven, is working, besides other things, on the reception of the *Physiognomia* in the Middle Ages and collecting information on the manuscript tradition of Buridan's *Physiognomia*. She also examined the contents of some questions of Buridan's work. Hopefully, these studies will shed more light on the doubts expressed by Michael.

58 See J. Ziegler, 'Philosophers and Physicians on the Scientific Validity of Latin Physiognomy, 1200–1500', cit., 285.

59 The close relationship between medieval physiognomy and medicine has been widely recognized by scholarship. See, for example, M. Ahonen, 'Medieval and Early Modern Physiognomy', in: S. Knuuttila and S. Juha (eds), *Sourcebook for the History of the Philosophy of Mind. Philosophical Psychology from Plato to Kant*, Springer, Dordrecht 2014, 633–635; J. Ziegler, 'Philosophers and Physicians on the Scientific Validity of Latin Physiognomy, 1200–1500', cit.; J. Agrimi, 'La ricezione della *Fisiognomica* pseudoaristotelica nella facoltà delle Arti', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 64 (1997), 127–188; Ead., 'Fisiognomica e 'Scolastica'', *Micrologus*, 1 (1993), 235–271; D. Jacquart, 'La physiognomonie à l'époque de Frédéric II: le traité de Michel Scot', *Micrologus*, 2 (1994), 19–37. Concerning the relationship between Buridan and medicine, Buridan's commentaries on the *Physiognomia* have already been considered, although not thoroughly. See, especially, J. Agrimi, 'La ricezione della Fisiognomica pseudoaristotelica nella facoltà delle Arti', cit., 180–181, Ead., 'Les *Quaestiones de sensu* attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert', in: J. Biard (ed), *Itinéraires d'Albert de Saxe*, Vrin, Paris 1991, 191–204, esp. 200. See also a quick reference in J. Kaye, *A History of Balance, 1250–1375. The Emergence of a New Model of Equilibrium and its Impact on Thought*, Cambridge University Press, Cambridge 2014, 443. Except for a few references (see the section on complexion, *infra*, 158), this thesis will not take into account Buridan's commentary on the *Physiognomia*. In fact, a thorough examination on Buridan's relation to medicine in his commentaries on the *Physiognomia* can be only properly conducted when the complex relations between Buridan's physiognomical texts will be clarified. See *supra*, footnote 56 and 57.

60 See *infra*, 98–124.

1.4. The Relationship between Natural Philosophy and Medicine in Buridan's Works: Research Purposes and Method

The previous overview of recent scholarship shows how topics related to natural philosophy have progressively acquired a central position in Buridanist studies. This is especially testified by the growing number of editions of Buridan's works on natural philosophy. Nevertheless, the amount of critical studies of these works still remains relatively small. For sure, as introduced in the previous paragraphs, one topic of Buridan's natural philosophy that still needs to be addressed almost completely is Buridan's description of the living organism, seen from the point of view of its strictly biological characteristics and functions.[61] In other words, what is lacking is an account of Buridan's description of the (living) body, considered from the point of view of its biological aspects such as, for example, the corporeal components of the process of sensation, the mechanisms of nutrition and sexual generation, its normal and pathological conditions, its physiological deterioration, and finally its coming-to-death.

The aim of the present thesis is therefore to outline some key aspects of Buridan's description of the living being, in its bodily functions and processes, by reading the *corpus* of Buridan's works on natural philosophy through a specific reading orientation: an account of the relationship between natural philosophy and medicine. In fact, this thesis has the following question as its main research question:

> *What is the relationship between natural philosophy and medicine in Buridan's natural philosophical writings?*

The relationship between natural philosophy and medicine in Buridan's works on natural philosophy is an almost unexplored topic. In general, scholarship concentrated on the use of philosophy in late medieval medical works and authors, while the other side of the issue, namely the influence and role of medicine in works written by philosophers has been largely neglected. In this framework, an important role is played by three contributions by Jole Agrimi, in which some characteristics of

61 This research orientation has been suggested by A. Ghisalberti, 'Somatologia tardomedievale. I problemi del corpo in Giovanni Buridano', in: *Il corpo, perché? Saggi sulla struttura corporea della persona. Contributi del XXXIII Convegno del Centro di studi filosofici di Gallarate (30 marzo–1 aprile)*, Morcelliana, Brescia 1979, 195–210. Ghisalberti's contribution, together with Agrimi's studies quoted in this Introduction (see *infra*, footnote 62), have inspired the present thesis.

the use of medicine in fourteenth-century Parisian Masters of Arts are outlined.[62] Apart from these studies, there is no secondary literature on Buridan and his use of medicine.

In order to answer the question of the relationship between natural philosophy and medicine in Buridan's natural philosophical works it is worthwhile to disassemble the main research question into a few subquestions that allow us to single out some relevant aspects of the more general issue. This thesis will therefore try to answer to the following questions:

> *Which medical sources and doctrines belonging to the medical tradition did Buridan take into account in his natural philosophical works? Which medical doctrines of his own time does Buridan consider?*
> *How did he insert them in the corpus of his natural philosophy?*
> *How did Buridan, in the context of his commentaries on the works of Aristotle, let medical sources and doctrines interact with Aristotelian thought?*
> *How did Buridan conceive the epistemological relationship between natural philosophy and medicine?*

In order to answer to these questions, the following natural philosophical texts by Buridan will be taken into account: his questions on the *De anima*, the *De generatione et corruptione*, the *Parva naturalia* (especially the *De longitudine et brevitate vitae* and the *De morte et vita*), and the *De secretis mulierum*.

In particular, I shall focus on a few case studies that allow me to select relevant information to answer to the main research question. The first set of case studies will concern the so-called 'controversy between philosophers and physicians'. With respect to this controversy, the two most intensely debated matters of discordance between the philosophical and medical traditions will be analyzed: (1) the problem of the so-called 'hegemonic organ', with particular attention to the question of the localization of the common sense and the origin of veins and blood; and (2) the problem of specifying the roles of male and female in human reproduction,

62 J. Agrimi, 'La ricezione della *Fisiognomica* pseudoaristotelica nella facoltà delle Arti', cit.;Ead., 'Les *Quaestiones de sensu* attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert', cit.; Ead., *Le* Quaestiones de sensu *attribuite a Oresme e Alberto di Sassonia*, La Nuova Italia Editrice, Firenze 1983. Some considerations on Buridan and medicine are also in C. Grellard, 'La reception médiévale du *De somno et vigilia*. Approche anthropologique et épistemologique du rève, d'Albert le Grand à Jean Buridan', cit., concerning the medical approach to dreams.

especially the question of the nature of the female contribution to generation, of the material permanence of the male sperm in the embryo, and of the nature of the female *menstruum*. The second set of case studies will examine two concepts placed at the crossroads between medical and philosophical discourses on living beings, namely the concept of 'complexion' (*complexio*) and the concept of 'radical moisture' (*humidum radicale*).

1.5. Structure of This Thesis

This thesis consists of three main chapters (chapters 2–4), a conclusion (chapter 5), an Appendix (A) containing the first critical edition of Buridan's *Quaestiones de secretis mulierum*, and a shorter Appendix (B) presenting some preliminary remarks on the *Quaestiones de animalibus* ascribed to Buridan and contained in ms. Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 2164.

Chapter 2 examines the authenticity of Buridan's commentary on *De secretis mulierum*, in particular the authenticity of two texts on women's secrets contained in ms. Erfurt, Universitätsbibliothek, CA Q. 299 (E) and ms. Paris, Bibliothèque Nationale de France, Lat. 8513 (P).[63] This chapter contains a historical-literary inquiry that confirms the authenticity of the questions on the *De secretis mulierum* contained in the Erfurt manuscript. It has been placed at the beginning of this thesis to justify the fact that, in subsequent chapters, parts of Buridan's commentary on the *De secretis mulierum* will be used to analyze Buridan's relation to medicine. It is therefore an independent part of this thesis, which is nonetheless necessary for the consistency of my work.

Chapters 3 and 4 examine Buridan's natural philosophical texts useful to understand the relationship between Buridan's natural philosophical teachings and medicine.[64] Each chapter is divided into two case studies. Chapter 3 examines Buridan's discussions of the so-called 'hegemonic organ' and the problem of the roles of male and female in reproduction. This chapter bears witness to Buridan's approach to the so-called 'controversy between philosophers and physicians'. Chapter 4 focuses

63 The contents of this chapter are based on a material published in C. Beneduce, 'John Buridan's Commentary on pseudo-Albertus Magnus' *De secretis mulierum*', *Bulletin de philosophie médiévale*, 56 (2014), 221–245.

64 The three main chapters and each section within chapters 3 and 4 have been written as separate articles and/or conference papers. I could therefore not completely avoid some overlap.

on some key elements of Buridan's use of medical doctrines examined by studying his use of the concepts of 'complexion' and 'radical moisture'.[65]

The conclusion (chapter 5) attempts to provide answers to the four subquestions formulated above so as to offer a more general account of the relationship between natural philosophy and medicine in Buridan's natural philosophical works. In addition, I shall formulate some more general considerations concerning Buridan's description of the living organism and concerning the way Buridan built his natural philosophy. In that final section, it shall therefore be possible to assess to what extent the present study contributed to expand and improve our knowledge of Buridan's thought, adding important traits to the 'portrait' of Buridan depicted until now.

65 The aforementioned case studies, as conference papers, have all been presented at international conferences, workshops, and seminars. I have benefitted of the invaluable suggestions proposed by several scholars. In particular, different and more and more improved versions of the paper on the 'hegemonic organ' have been presented in Modena-Fondazione San Carlo (Seminario 'Intenzionalità e Coscienza'), at the Rijksuniversiteit Groningen (at the occasion of the international Summer School 'Epistemology and Cognition'), at Radboud University, Nijmegen (at the occasion of the research seminar of the Center for the History of Philosophy and Science), and in Florence-Università degli Studi di Firenze ('Il Problema della Conoscibilità di Dio e la Riflessione Gnoseologica Medievale' Conference). The version of the paper as read at the Florence meeting has been recently published for ETS Publisher, Pisa (see C. Beneduce, 'Conoscenza sensibile e nutrizione: il cardiocentrismo di Giovanni Buridano tra filosofia naturale e medicina' in: G. Garfagnini and A. Rodolfi (eds), Scientia humana *e* scientia divina. *Conoscenza del mondo e conoscenza di Dio*, ETS, Pisa 2016, 133–146). The present thesis offers a further developed and substantially revised version of that contribution. I would like to remark that the length of the section on the 'hegemonic organ', which could appear not-perfectly proportioned to the other sections, is due to the fact that it was the starting point of my research and has been subjected to many stages of elaboration. Moreover, it leaves some possible further research paths open, which I avoided to undertake within my Ph.D. project in order not to deviate too far from my main research goal. However, in the future, I intend to develop some aspects of fourteenth and fifteenth-century physiological views on sensation that I have only briefly sketched in this thesis. The case study on the male and female roles in reproduction has been presented in at the KU Leuven ('Leuven Workshop on Fourteenth-century Philosophy'). The paper on radical moisture has been presented at the Rijksuniversiteit Groningen (at the occasion of the 'First Dutch Seminar in Medieval Philosophy') and the one on complexion in Florence-Università degli Studi di Firenze ('*Oeconomia corporis*. The Body's Normal and Pathological Constitution at the Intersection of Philosophy and Medicine' Conference). A general outline of the four case studies considered together has been presented in Modena-Fondazione San Carlo ('XXIV Convegno Nazionale dei Dottorati in Filosofia'), at the KU Leuven, as a two-hours Bachelor's class within Prof. Pieter De Leemans and Dr. Erika Gielen's course, and at Radboud University, Nijmegen (at the occasion of an international 'Workshop on Recent Studies on John Buridan's Natural Philosophy and Metaphysics').

CHAPTER 2

John Buridan's *Quaestiones de secretis mulierum*

2.1. Introduction

The catalogues of works by John Buridan include a commentary on pseudo-Albertus Magnus' treatise D*e secretis mulierum*.[1] The same commentary is also attributed to Buridan in more general studies dedicated to different aspects of (later) medieval natural philosophy as well as in catalogues of manuscripts and repertories of incipits of medieval scientific writings.[2] In most cases, a unique manuscript copy of this commentary is mentioned, namely Erfurt, Universitätsbibliothek, Dep. Erf., CA Q.299. However, in her *Répertoire* of Masters of Arts at the University of Paris, Olga Weijers claims that Buridan's commentary on the D*e secretis mulierum* can also be found in another manuscript: Paris, Bibliothèque Nationale de France, Ms. lat. 8513. According to Weijers, the text contained in this manuscript constitutes a different redaction from

1 See E. Faral, *Jean Buridan, maître ès arts de l'Université de Paris*, Imprimerie Nationale, Paris 1950, esp. 34, 111–112; Id., 'Jean Buridan: notes sur les manuscrits, les éditions et le contenu de ses ouvrages', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 15 (1946), 1–53, esp. 35; B. Michael, op. cit., 789–791.

2 See J. Agrimi, 'La ricezione della F*isiognomica* pseudoaristotelica nella facoltà delle Arti', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 64 (1997), 127–188, esp. 178; Ead., *Le* Quaestiones de sensu *attribuite a Oresme e Alberto di Sassonia*, La Nuova Italia Editrice, Firenze 1983, 36–39; Ead., 'Les *Quaestiones de sensu* attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert', in: J. Biard (ed), *Itinéraires d'Albert de Saxe: Paris-Vienne au XIV^e siècle*, Vrin, Paris 1991, 191–204, esp. 200; P. Glorieux, *La Faculté des arts et ses maîtres au XIII^e siècle*, Vrin, Paris 1971, 78, 204 (Glorieux includes the text both in the list of pseudo-Albertus Magnus' D*e secretis mulierum* and Buridan's D*e secretis mulierum*); M.H. Green, 'Handlist of Latin Manuscripts of Pseudo-Albertus Magnus *Secreta Mulierum* (with a supplemental list of manuscripts of the Dutch, French, German, and Italian translations)', unpublished, 2008 (I thank the author for sending me the text); Ead., *Making Women's Medicine Masculine: The Rise of Male Authority in Pre-Modern Gynecology*, Oxford University Press, Oxford 2008, 215; M. Markowski, 'L'influence de Jean Buridan sur les universités d'Europe centrale', in: Z. Kaluza and P. Vignaux (eds), *Preuve et raisons à l'Université de Paris: logique, ontologie et théologie au XIV^e siècle*, Vrin, Paris 1984, 149–163, esp. 156, 162; W. Schum, *Beschreibendes Verzeichnis der Amplonianischen Handschriften-Sammlung zu Erfurt*, Weidmannsche Buchhandlung, Berlin 1887, 538–539; L. Thorndike, *A History of Magic and Experimental Science*, II, Columbia University Press, New York 1923, 741,749; Id., 'Buridan's Questions on the *Physiognomy* Ascribed to Aristotle', *Speculum*, 18 (1943), 99–103, esp. 100; L. Thorndike and P. Kibre, *Catalogue of Incipits of Medieval Scientific Writings in Latin*, Mediaeval Academy of America, Cambridge (MA)1963, esp. 1649.

the one contained in the Erfurt manuscript.[3] It is the aim of the present chapter, first, to show that the Paris text is *not* a commentary by Buridan on pseudo-Albertus' *De secretis mulierum*, but rather a different version of pseudo-Albertus' work; and second, to demonstrate that Buridan can be safely considered to be the author of the question commentary contained in the Erfurt manuscript.

2.2. The Manuscripts

2.2.1. *Paris, Bibliothèque Nationale de France, Ms. lat. 8513, ff. 144^{r}–161^{v}*

The text contained in Paris, Bibliothèque Nationale de France, Ms. lat. 8513, ff. 144^{r}–161^{v} (henceforth: **P**),[4] begins as follows: 'Scribitur secundo *De generacione et corrupcione animalium*: generacio animalium sempiterna est. Causam autem sempiternitatis abscribit (!) Philosophus in libro *De generacione* et secundo *De anima* dicens …'[5] The *explicit* is: '… Si autem sentiat in fine quinti mensis, signum est quod in nono mense pariet et ibidem (?) est de muliere impregnata. Et sic est finis tocius libri secretorum. Amen. Jo. C.'.[6]

The colophon of the text in **P** suggests an attribution to Buridan, assuming that 'Buridani' is the most natural reading of the abbreviation 'Buri^{ni}'.

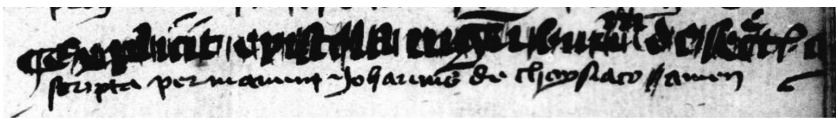

FIGURE 1 *Explicit epistola magistri Buri^{ni} de secretis m(?)⟨ulierum⟩ scripta per manum Johannis de Choysiaco. Amen.*[7]

3 O. Weijers, *Le travail intellectuel à la faculté des arts de Paris: Textes et maîtres (ca. 1200–1250)*, cit., 155. The *Catalogus codicum manuscriptorum bibliothecae regiae* 3.4, Paris 1744 mentions the work as follows: '17.° Magistri Burini epistola de secretis mulierum'. See Cat. codd., III/4, 466. C. Jeudy guessed that the 'Buri^{ni}' in the colophon should be read as 'Buridani' and hence ascribed the work to Buridan; nevertheless, she expressed her doubts about this attribution by posing a question mark after Buridan's name. See C. Jeudy, 'L'*Ars de nomine et verbo* de Phocas: manuscrits et commentaires médiévaux', *Viator*, 5 (1974), 61–159, esp. 131–132. It seems that Weijers took the information about the attribution of the text to Buridan from Jeudy.

4 The text ends at f. 161^{v} but the codex has two more pages bearing two images of hands with lifelines, which do not seem to pertain to the text itself.

5 See P, f. 144^{r}.

6 See P, f. 161^{r}.

7 See P, f. 161^{r}.

Precisely the same abbreviation is repeated in the list of chapters given in P at the end of the text: 'Hic sequntur rubrice epistole magistri Buri[ni] in secretis mulierum'.[8] Both in the colophon and in the list of chapters the text is labelled as an *epistola*.

The list of chapters divides the work into fourteen chapters with the following titles:

Primo de generatione ambrionis;
Secundo de formatione successionis fetus secundum influentias superiores;
Tertio de regressione (?) *fetus ad formam*;
Quarto de influentia planetarum corporis et etiam anime;
Quinto de generatione animalium sine[9] *semine*;
Sexto de completa formatione ambrionis;
Septimo de generatione menstruorum (!);[10]
Octavo de tempore egressus fetus ab utero matrino;
Nono de signis conceptionis;
Decimo de signis corruptionis et castigationis;
Undecimo de signis fluxus menstruosorum;
Duodecimo de suffocatione matricis in muliere;
Tertio decimo de impedimentis conceptionis;
Quarto decimo de generatione spermatis in viro.[11]

A careful comparison of the text in P with that of pseudo-Albertus Magnus' *De secretis mulierum* (according to the edition published by José Pablo Barragán Nieto in 2012, henceforth: BN),[12] shows that it is unlikely that the text in P is a commentary by Buridan on *De secretis mulierum*. As a matter of fact, the text in P is very close to the text in BN. Evidence for this conclusion can be drawn, first of all, from the fact that the text in P is characterized as an *epistola* both in the colophon ('Explicit *epistola* …') and in the announcement of the list of chapters ('sequntur rubrice *epistole* …'): the *De secretis mulierum* has a (pseudo-)epistolary form.[13] Second, the table below shows that

8 See P, f. 161[v].
9 sine] *corr. ex* fine (?).
10 menstruorum] *rectius* monstruorum.
11 See P, f. 161[v].
12 See pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, cit.
13 See pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 45.

the beginnings of the chapters of the text contained in P match the chapters of the *De secretis mulierum* in BN.[14]

BN	P
(214) Prologus: Dilectissimo sibi in Christo socio et amico R. de tali loco, G. talis loci vere sapiencie et istius presentis in Christo Iesu incrementa … (218) Sicut *scribitur secundo* De generatione et corrupcione: *generacio animalium sempiterna est* et ideo in circuito.	(f. 144^{r}) *Scribitur secundo* De generatione et corruptione animalium: *generatio animalium sempiterna est.*
(228) Capitulum primum: De generacione embrionis – *Primum ergo capitulum in hoc opere intentum erit de generacione embrionis in utero materno, et penes istius generacionis naturam et motum plura videbuntur que apud naturam mulierum sunt occulta.*	(f. 144^{r}) *Primum igitur capitulum hoc intentum erit de generatione ambrionis in utero materno, et penes ipsius generationis naturam et postmodum* (f. 144^{v}) *plura videbuntur que apud naturam mulierum sunt occulta.*
(250) Capitulum secundum: De successiva formacione fetus secundum influenciam superiorum – *Hiis visis redeundum est ad formacionem fetus in matrice mulieris.*	(f. 148^{r}) *Hiis autem viris redeundum est ad formationem fetus in matrice mulieris.*
(306) Capitulum tercium: De influentia planetarum ex parte corporis et anime – *Post hec vero ad influenciam planetarum, quos antiqui vocaverunt nature dominos, super hominem ex parte corporis et anime nunc revertamur. Saturnus vero qui superioribus obscurius et tardior existens et eciam gravior natum facit qui sub eo nascitur fuscum in colore ex parte corporis …* (308) *Secundum animam quidem est natus multe perfidie, tristis et malignus …*	(f. 151^{v}) *Post vero influentias planetarum* quas Aristoteles tractans (!) de constellationibus *dominos nature vocavit super homines ex parte corporis revertamur. Saturnus vero quidem existens superior gravis obscurius tardus facit natum qui sub eo oritur fuscum in colore ex parte corporis … Secundum autem animam sunt multe perfidie et malitie.*
(326) Capitulum quartum: De generacione animalium sine semine – *Ac igitur ea que dicta sunt lucidiori lumine cognoscantur, et quomodo plures fetus aliquando fiunt in matrice et plures pueri ita nascuntur.* Oportunum est modicum disgredi ab hominis generacione, *et videndum est de generacione animalium imperfectorum, que non ex semine sed putrefaccione generantur.*	(f. 153^{r}) *Et que dicta sunt lucidiori lumine reconoscantur, et quomodo plures pueri in matrice nascuntur oportet discredi ab hominibus generatione. Videbitur in generatione animalium imperfectorum, qui non ex semine sed ex putrefactione generantur.*

14 The sentences that are literally the same or closely parallel are printed in italics.

BN	P
(354) Capitulum quintum: De formacione embrionis – *Nunc autem ad ea que superius dicta sunt de generacione et formacione embrionis in utero materno sermonem nostrum convertamus, et de modo exitus aliqua tangamus.*	(f. 153^{v}) *Nunc vero ad ea que superius dicta sunt de generatione et formatione embrionis in utero materno sermonem nostrum convertamus, et de modo exatus aliqua tangamus.*
(362) *Tempus autem egressus est ab utero materno ut frequencius in nono mense, quibusdam tamen mulieribus in* septimo *mense hoc accidit,* quibusdam vero in octavo mense, *quibusdam vero in decimo mense,* quibusdam autem undecimo mense, *et ultra non.*	(f. 154^{r}) *Tempus vero egressus ab utero materno est ut frequentius in nono mense, quibusdam vero mulieribus in* octavo *mense accidit, quibusdam in decimo et non ultra.*[15]
(390) Capitulum sextum: De generatione animalium monstruosum – *Sicut enim dicit Philosophus secundo* Physicorum *quod peccatum est in natura accidere sicut et in arte.*	(f. 155^{r}) *Dicit autem Philosophus secundo Physicorum quod peccatum est in natura accidere sicut est in arte.*
(422) Capitulum septimum: De signis concepcionis – Intento *sermone quantum ad presens sufficit de generacione et formacione fetus* et penes quem modum *et de pluribus aliis* materie *incidentibus, ut presens doctrina magis complete habeatur, notanda sunt signa conceptionis in muliere, que sunt plura.*	(f. 156^{r}) Finito *sermone quantum ad praesens sufficit de formatione etcetera generatione* secundo *et pluribus aliis incedentibus, ad praesens ut doctrina cumplexius habeatur videnda sunt signa cumceptionis in meliere que plura sunt.*
(442) Capitulum octavum: De signis castitatis et corrupcionis – *Post hec notanda sunt signa corrupcionis castitatis. Iuxta quod notandum quod aliquando virgines iuvenes corrumpuntur graviter …*	(f. 157^{r}) *Post hec aliqua de signis castitatis* et fluxus menstruorum videamus. *Sed primo notandum est quod alique vergines dum corrumpuntur leduntur graviter.*
(456) Capitulum nonum: De debilitate matricis que suffocatio dicitur – *Et quia iam de menstruo satis dictum est, redeamus ad locum* menstruorum, *hoc est, ad matricem, et videamus quedam accidencia circa ipsam.*	(f. 159^{r}) *Et quia de menstruo satis dictum est, ideo redeamus ad locum* materie, *scilicet ad matrice, et ibidem videamus quaedam accidentia circa ipsum* (!).
(466) Capitulum decimum: De impedimentis concepcionis – *Nunc autem de impedimentis concepcionis aliqua tangamus. Impedimenta enim concepcionis plura sunt …*	(f. 159^{v}) *Nunc de impedimento cumceptionis aliqua tangamus. Sunt enim impedimenta plura.*

15 This passage does not mark the beginning of a new chapter in BN. On the other hand, it constitutes a new chapter in P: it is marked as new chapter and follows the previous chapter, which ends with the words 'et hec de isto capitulo', and it corresponds with the title listed in the list of chapters in P as 'Octavo de tempore egressus fetus ab utero matrino'. See P, f. 161^{v}.

BN	P
(478) Capitulum undecimum: De iuvamentis impregnacionis – Si aliquis voluerit iuvare *mulierem ut* impregnetur et *masculum concipiat, accipiat matricem leporis et eiusdem intestina, et dessicari faciat, et pulverem modo factum bibat mulier distemperatum cum vino* …	(f. 159^{v}) Ad adiuvandum (?) *mulierem ut masculum concipiat accipiat matricem leporis et eius intestina et dessicari faciat, et pulverem in se factum bibat distemperatum cum vino.*
(494) Capitulum duodecimum: De generatione spermatis – *Antequam* vero finem dictis imponamus, ut doctrina nostra facilior et magis complete habeatur, cum de natura menstruorum aliqualiter dictum sit, transeundum est ad naturam spermatis in viro, penes cuius naturam plura videbuntur. *Sperma vero, ut supra dictum est, nichil aliud est quam superfluum alimenti quod in substancia rei alende non cedit.*	(f. 160^{r}) *Antequam* dicamus de natura spermatis viri aliqua dicamus. *Unde sperma viri, ut supra dictum est, nihil aliud est quam superfluum alimenti vel nutrimenti quod in substancia rei alende non cedit.*

Third, the close similarity between the two texts is confirmed by a comparison of some longer passages taken from the beginning (chapter 1), the middle (chapter 6), and the end (chapter 12) of the texts in BN and P. These passages, in fact, differ only in some phrases and words, as the table here below makes it clear.[16]

BN	P
(228–232) Capitulum primum: De generatione embrionis – *Primum ergo capitulum in hoc opere intentum erit de generatione embrionis in utero materno, et penes istius generationis naturam et* motum *plura videbuntur que apud naturam mulierum sunt occulta. Postquam autem sermo noster premissus est de his que intellectum auditoris circa stili nostri materiam acuunt* et inclinant, *oportunum est ad materiam operis descendere et primo de generacione embrionis videre. Iuxta quod notandum et diligenter memorie commendandum quod omnis homo qui generatur naturaliter ex semine patris et menstruo matris generatur secundum intencionem philosophorum et medicorum.* Et dico 'medicorum'	(f. 144^{r}) *Primum igitur capitulum hoc intentum erit de generatione ambrionis in utero materno, et penes ipsius generationis naturam et* postmodum (f. 144^{v}) *plura videbuntur que apud naturam mulierum sunt occulta. Postquam sermo noster premissus est de hiis que intellectum auditoris circa stili materiam accuunt, oportunum est ad materiam operis descendere et primo de generatione ambrionis. Iuxta ⟨hoc⟩ intelligendum est et memorie commandandum quod omnis homo generatur ex semine patris et menstruo matris secundum intentionem philosophorum et medicorum.* Et dico 'medicorum' *quia Aristoteles non potuit semen matris in substantiam fetus incedere sed ad* communem formam

16 Correspondences between the two texts are printed in italics.

BN

quia Aristoteles non ponit semen patris in substanciam fetus tendere sed ad formacionem speciei fetus tamen producere. *Et postea ponit ipsum vaporabiliter exalare. Medici autem dicunt totum semen tam ex parte patris, quod sperma vocatur, quam ex parte mulieris, quod dicunt esse menstruum, tendere in substanciam fetus. Istis ergo visis et accepta una parte, vel Aristotelis vel medicorum, quia hoc hic non determino, videndum est per quem modum ista semina recipiantur in muliere. Mulier vero cum in coitu cum viro fuerit, tunc in eodem tempore emittit menstruum in quo vir sperma, ita quod ista semina* in vulva mulieris *sibi concurrunt et unum incipit alteri inmisceri, e sic concipit mulier.* 'Concipere' autem vocatur quando illa semina in matrice, *hoc est in tali loco deputato a natura ad fetum, recipiuntur. Et postquam ista semina recepta sunt, matrix mulieris clauditur ex omni parte firmiter, ita quod nichil de semine recepto possit amitti. Et cum matrix fuerit clausa sic undique, fit retencio menstruorum in muliere.*

(390–396) Capitulum sextum: De generacione animalium monstruosum – *Sicut enim dicit Philosophus secundo* Physicorum *quod peccatum est in natura accidere sicut et in arte. Cuius quidem declaracio ad presentis negocii* manifestacionem in quantum non competit multum valet. Sciendum *ergo quod monstra sive peccata in natura vocantur illa individua alicuius speciei que in aliqua parte corporis eorum communem cursum nature illius speciei excedunt, sicut contingit videri in hominibus habentibus* nisi *unum pedem, vel unam manum,* vel tres, *et sic de aliis.* Istud quidem miraculum *accidit diversis modis: aut autem ex diminucione materie, aut ex superhabundancia. Ex diminucione contingit multis modis* interpositis. *Uno quidem modo diminucio* attribuitur materie *totaliter in se. Et tunc, cum principalia membra primo debeant formari, natura sagax et ingeniosa facit ut complecius* potest, *et ea que principalia sunt format. Et istis dispositis et formatis, ad formacionem ceterorum membrorum* studet, *et ibi ex materia quam habet* facit potest, et format partem diminutam, *quoniam diminucio est in materia. Et isto modo contingit aliquando caput maius esse quam natura requirat illius individui*

P

speciem tantum procedere. *Et postea ponit vapositates exallare. Medici autem dicunt totum semen tam ex parte patris, quod sperma vocatur, quam matris, quod menstrum dicitur, sedere in substantiam fetus. Istis autem visis et accepta una parte, vel Aristotelis vel medicorum, quia de hoc nihil determino qualiter sperma et menstrum commiscentur in muliere, videndum est ergo per quem modum quia ista semina recipiuntur in muliere. Mulier ergo cum in coitu cum viro fuerit, si in eodem tempore emittit menstruum in quo vir sperma, ita quod ista semina* loco suo *sibi concurrant et unum incipiat alteri misceri, concipit cunceptum* (!) autem fit similiter/sicut in matrice *hoc est in tali loco deputato a natura ad fetum recipiendum. Postquam vero semina recepta sunt, matrix mulierum clauditur firmiter ab omni parte ut nichil de semine recepto possit admitti et fit menstruorum retentio cum matrix undique clausa sit ut nichil ex ipso fetus nutriatur.*

(f. 155^{r}) *Dicit autem Philosophus secundo* Physicorum *quod peccatum* (?) *est in natura accidere sicut est in arte. Cuius autem declaratio seu determinatio ad presentis negocii.* Declarationem multum valet notandum est *ergo quod monstra sive peccata vocantur in ista materia individua alicuius speciei que in aliqua parte corporis communem cursum nature illius speciei excedunt, sicut communiter videtur in hominibus habentibus* duo capita, vel *unum pede⟨m⟩* tantum (?), *vel unicam manum et sic de aliis.* Notandum est tamen quod illud miraculosum, quod philosophi monstruositatem (?) vocant, *accidit diversis modis. Aut enim accidit ex diminutione materie autem ex superhabundancia sic est diminucione contingit pluribus modis* specialissimis. *Uno modo autem diminutio* accipitur *totali modo in se et cum membra membra princip⟨al⟩ia primo debeat ordinari* et formari, *natura sagax et ingeniosa facit ut complexius* postea *que sunt princip⟨al⟩ia format istis vero dispositis et formatis* mittitur *ad formationem ceterorum membrorum et ibi ex materia quam habet* membra format et facit quod propter formas + parcium diminuere + quoniam *diminutio est in materia. Et hoc modo contingit caput essere maius* et

BN	P
particularis sic generati. Et *loquor de individuo* tali et *sic generato, quia si diminucio in materia periacente formacioni non affuisset, caput nunc formatum sub diminucione materie proporcionale esset nature individui in se et in omnibus aliis membris.* Et *illud eciam in aliis* principalibus *concludit potest,* tunc in istis principalibus *tenet ordo, ut philosophi naturales et medici attestantur.*	minus *quam natura requirat individui particulares sic generari.* Et *non loquor de individuo sic generato, quia si diminuitio in materia preiacente formationem non fuisset, caput formatum non sub diminutione materie proportionalem esset nature individui in se et in omnibus aliis membris.* Et *illud etiam etcetera in aliis* principiis *concludi potest,* tamen in istis pluribus *tenet ordo, ut philosophi naturales et medici atestantur.*
(494–498) Capitulum duodecimum: De generatione spermatis – *Antequam* vero finem dictis imponamus, ut doctrina nostra facilior et magis complete habeatur, cum de natura menstruorum aliqualiter dictum sit, transeundum est ad *naturam spermatis in viro,* penes cuius naturam plura videbuntur. *Sperma* vero, *ut supra dictum est, nichil aliud est quam superfluum alimenti quod in substancia rei alende non cedit. Iuxta cuius generacionem primo considerandum est quod medici ponunt quattuor digestiones in homine, scilicet, unam in ore, aliam in stomacho, terciam in epate, quartam in singulis membris* alendis et *augmentandis. Philosophi vero naturales in hoc discordant a medicis, quia primam, virtuosam et magis perfectam ponunt in corde. Prima vero digescio, que est in ore, nichil aliud est quam bona et subcilis masticacio cibi, quia, secundum intencionem medicorum, propter hoc natura homini et alteri animali dentes ministravit, ut per eos cibum conterant.* Et *ideo natura animalibus in* superiori *mandibula dentibus carentibus adaptavit* duos ventres: *unum quidem in quem cibum ponunt; alium vero ut in eo ruminatum alimentum colligant, secundum quod ab* aliis *membris principalibus iuvatur digescio ad exspolliandum nutrimentum forma sua usque quo est in singulis membris secundum exigentiam deperditi. Quod per calorem naturalem omni tempore fit, qui in humidum sibi subiectum tamquam in materiam agit ut fiet restauracio. In hominibus vero subtilior est digescio, secundum quod sibi competit propter multa, scilicet, propter multitudinem operacionum, tunc quia excellentissime est nature inter omnia* vivencia *corruptibilia.*	(f. 160^{r}) *Antequam* dicamus *de natura spermatis viri* aliqua dicamus. *Unde sperma viri, ut supra dictum est, nichil aliud est quam superfluum alimenti vel nutrimenti quod in substantia rei alende non cedit. Iuxta cuius considerationem est notandum quod medici ponunt quatuor digestiones in homine. Unde prima est in ore, secunda in stomaco, tertia est in epate, quarta est in singulis* (?) *membris augmentantis. Philosophi vero naturales in hoc a medicis discordant, quia primam, virtuosam ut magis perfectam ponunt in corde. Ipsa vero prima digestio, que est in ore, nichil aliud est quam bona et subtilis masticatio cibi, quia, secundum intentionem medicorum, propter hoc natura hominibus et aliis animalibus dentes administra⟨n⟩t, ut per eos cibos conterant.* Et *natura in animalibus* inferiori *mandibula dentes non habentibus adaptat* unum loquum *in quo ponunt cibum; alium in eo ruminant alimentum ultimate* (?) *colligent, secundum quod ab* hiis *principalibus membris iuvantur dispositio ad expoliendum nutrimentum sua forma quo usque est in singulis membris secundum exigentiam* (?) *deperditi quia per calorem naturalem hoc fit in omni tempore sic in humidum sibi subiectum tamquam in materiam et contingit ut restauratio fiat. In homine vero fit subtilior digestio, secundum quod ei competit propter multa, scilicet propter multitudinem operum,* (f. 160^{v}) *tamen quia exellentissime est nature inter omnia corruptibilia.*

It should be emphasized, however, that the texts in P and in BN are not exactly the same; they differ in some important respects. First of all, contrary to the text in BN, the text in P does not begin with a *salutatio* and an *exordium* or *captatio benevolentiae*. Furthermore, the first chapter of the text in P is significantly longer than the first chapter in BN: P contains a list of sixteen *dubitationes*, whereas BN has only five.[17] It seems that the relationship between the texts in P and BN is complex. Yet it is not the aim of the present chapter to examine this relationship in closer detail. For my present purpose it suffices to conclude that it is unlikely that the text in P is a commentary by John Buridan on the *De secretis mulierum*, despite the fact that it is plausible and natural to read the abbreviation 'Buri$^{ni'}$ as 'Buridani'. The text in P seems to be a different version (or redaction) of pseudo-Albertus Magnus' text.[18] This conclusion can be sustained on the basis of the evidence I have found: like the text in BN, the text in P is presented as an *epistola*; it has the very same structure as the text in BN; and the similarity between the two texts is confirmed by a comparison between three longer passages taken from both of them. Moreover, there are good reasons to exclude the possibility that the text in P constitutes a literal commentary (by Buridan) on pseudo-Albertus Magnus' work. It is true that the tradition of commentaries on the *De secretis mulierum* is extremely complicated: there is a fair number of them, and they circulated both as independent works and interlaced with pseudo-Albertus Magnus' text. To date, there are no detailed studies on that tradition.[19] Nevertheless, it seems safe to conclude that P is not a literal commentary on pseudo-Albertus Magnus' work, for the following reasons. First, and most importantly, the text in P contains no typical elements of a literal commentary; for example, there are no traces of a *divisio textus*, references to the text commented upon by means of *lemmata*, or references to the author of the text commented upon (in the third person singular). Such references are instead clearly present in some texts that we know for sure to be commentaries on the *De secretis mulierum*.[20] Second, the *incipit* of the text in P does not match any of the incipits on

17 See pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 236–249 and P, f. 148^{r} ('Sextodecimo dubitatur quare …').

18 As Lemay explains, '… the *De secretis mulierum* exists in a number of versions …' and 'The complicated codicological situation is matched by variations in the editions'. See pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, cit., 1.

19 See pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 84; pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, cit., 2; M. Green, 'Handlist of Latin Manuscripts of Pseudo-Albertus Magnus *Secreta Mulierum*', cit., 2–3.

20 In her volume, Lemay gives (in English translation) selections from two commentaries by unknown authors that '… were frequently printed with the text and exist in many of the manuscripts' (they are

the basis of which most of the literal commentaries on the *De secretis mulierum* are usually classified:[21] the texts in P and in BN begin in precisely the same way, if one excludes the *salutatio* and the *exordium* of the first lines in BN. This evidence seems strong enough to justify the conclusion that the text in P is not a (literal) commentary on the *De secretis mulierum*, but a version of pseudo-Albertus Magnus' text itself.

2.2.2. *Erfurt, Universitätsbibliothek, Dep. Erf., CA Q.299, ff. 167^{r}–175^{v}*

Manuscript Erfurt, Universitätsbibliothek, Dep. Erf., CA Q.299 (henceforth: E) belongs to the well-known collection of manuscripts owned by Amplonius Rating de Berka. It contains the following works:[22]

1. Nicole Oresme, *Quaestiones super* De caelo. (ff. 1^{r}–50^{r});
2. Nicole Oresme (?), *Quaestiones super libros* Metheororum (ff. 52^{r}–103^{v});
3. Dominicus de Clavasio, *Lectiones super* De sphaera (ff. 104ra–112ra);
4. Nicole Oresme, *Quaestiones super* De sphaera (ff. 113^{r}–126^{r});
5. Anonymous, *Quaestiones parvorum naturalium* (ff. 128^{r}–157^{v});
6. Johannes Buridanus, *Commentum super* Physiognomiam *Aristotelis* (ff. 158^{r}–165^{v});
7. Johannes Buridanus, *Quaestiones super* De secretis mulierum (ff. 167^{r}–175^{v});
8. Johannes Parisiensis (?), *Tractatus de complexionibus* (ff. 176ra–177ra);
9. Anonymous, *Commentarium de complexionibus* (ff. 178ra–183^{rb}).

The commentary on the *De secretis mulierum* (ff. 167^{r}–175^{v}) has the following *incipit*: 'Questio: utrum generatio animalium sit perpetua vel sempiterna'[23] and the following

---

labelled 'A' and 'B', and are respectively taken from the 1580 Lyons edition and the 1508 Venice edition). See pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, cit., 2. Both commentaries present references to the author of the text in the third person singular. See the following examples. Commentary A: 'First the author salutes the person to whom he writes, saying 'I, Albert, staying in Paris, to my dear friend and companion in Christ'. Then he brings up the efficient cause …'. See *ibidem*, 59. Commentary A: 'At this point the author takes up the formation of the fetus; he first discusses the topic and then brings in some relevant points'. See *ibidem*, 65. Commentary B: 'When in the text the author mentions the womb closing up like a purse, this is similar to someone having a friend and giving her as a gift something that she likes very much … Note that the text says that the female menses is the superfluity of food, etc. In relation to this you should understand that digestion is manifold …'. See *ibidem*, 70–71.

21 See pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 84–89.

22 See J. Agrimi, *Le* Quaestiones de sensu *attribuite a Oresme e Alberto di Sassonia*, cit., 36–39.

23 See E, f. 167^{r}.

explicit: 'Ad sextam conceditur consequentia de mulieribus colericis quia in plenilunio augmentantur humores colerici ut dictum est etc. etc. etc'.[24] The text is composed of eight *quaestiones*:

1. *Utrum generatio animalium sit perpetua vel sempiterna* (f. 167^{r});
2. *Utrum generatio hominis sit perfectissima* (f. 168^{r});
3. *Utrum embryo generatur ex spermate viri et menstruo mulieris* (f. 168^{v});
4. *Utrum post conceptionem sperma viri maneat in genito vel ingrediatur substantiam foetus* (f. 169^{v});
5. *Utrum in conceptione fiat emissio seminis ex parte viri et femellae* (f. 171^{r});
6. *Utrum menstruum sit superfluum alimenti ultimi* (f. 172^{r});
7. *Utrum menstruum mulieris sit materia foetus* (f. 173^{r});
8. *Utrum mulieres patiantur fluxum menstruorum in defectu lunae* (f. 173^{v}).

The colophon explicitly mentions Buridan (written in full) as the author of the *quaestiones*:

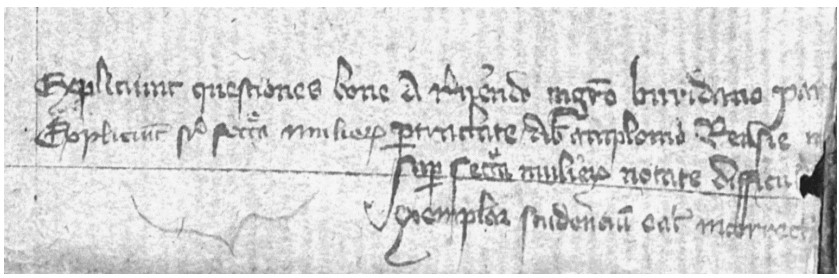

FIGURE 2 *Expliciunt questiones bone a reverendo magistro buridano par.*
Expliciunt super secreta mulierum pertractate ab amplonio rensie (?) ra (?)
super secreta mulierum notate difficul⟨ter⟩ ⟨quoniam?⟩
exemplar studencium erat incorrectum.[25]

24 See E, f. 175^{v}. Immediately after the *explicit* of the text there is a passage characterized by theological contents that seems to be written by the same hand, namely that of Amplonius, but which clearly does not pertain to the commentary on the *De secretis mulierum*: 'pro quo in deo non sit misericordia quia misericordia est passio appetitus sensitivi ut patet secundo ethicorum et secundo rethorice in deo autem non est appetitus sensitivus quare et cetera dicendum secundum commentatorem duodecimo metaphisice quod ea que sunt in deo et in istis inferioribus non sunt dicta univoce sed equivoce vel anologice ut patet de scientia dei quia sua scientia est causa rerum naturalium et nostra est causata a rebus naturalibus et similiter misericordia in ipso et in nobis dicitur equivoce unde in ipso non est passio appetitus sensitivi sicud in nobis nec est aliquid reale additum sue essentie sicud in nobis sed differt tantum a sua essentia secundum racionem'. See E, f. 175^{v}.

25 See E, f. 175^{v}.

In his catalogue of 1887, Wilhelm Schum, on the basis of the colophon to the text, ascribes the work to Buridan.[26] Until today, all scholars have accepted Schum's attribution, without making further attempts to confirm Buridan's authorship. The only exception is Bernd Michael, who, in his Ph.D. thesis of 1985, mentions two (external) criteria that, in his view, confirm the attribution of the text to Buridan: (1) the author of the commentary seems to be a master in the Arts Faculty (which, according to Michael, is testified by the controversy with the physicians found in the text), and (2) the style of the text (*Sprachstil*) suggests that Buridan is indeed the author. However, Michael also points out that Buridan's authorship remains uncertain because a comparison with other works by Buridan is difficult owing to the medical content of the eight *quaestiones*.[27]

In the next section, I shall further examine Buridan's authorship of the commentary in E by focusing on the content of its text, more specifically on some striking

26 See the entry of W. Schum, *Beschreibendes Verzeichnis der Amplonianischen Handschriften-Sammlung zu Erfurt*, cit., 538–539: '1) Bl. 1–50. Item questiones Orem super de celo. [...] 2) Bl. 51–103'. Questiones eiusdem super metheororum. [...] 3) Bl. 104–112. Dominici de Clavasio lectiones de sphera. (*Nicht im Cat.*) [...] 4) Bl. 113–126. Questiones eiusdem (i.e Orem) super speram bone. [...] 5) Bl. 128–157'. Questiones parvorum naturalium Orem. [...] *6)* Bl. 158–165'. Commentum super phisonomiam (!) eiusdem (i.e. Aristotelis Iohanni Buridano auctori attributum). [...] *7)* Bl. 157–175'. Questiones de secretis mulierum eiusdem. [...] 8) Bl. *176*–183. Tractatus de complexionibus cum glosa. [...]'. First, note that Schum's indication of the *folia* of the *Quaestiones de secretis mulierum* (157–175) is incorrect: the commentary is found on *ff.* 167–175. Second, and more importantly, Schum's catalogue could actually seem ambiguous because of his attempts to clarify to whom the word *eiusdem* used in Amplonius' inventory is supposed to refer. In fact, Amplonius' inventory ascribed all of the works contained in the Erfurt manuscript (except for the *Tractatus de complexionibus*) to Nicole Oresme: 'Item questiones Orem super de celo; questiones eiusdem super metheororum, questiones eiusdem super speram bone; questiones parvorum naturalium Orem; commentum super phisonomiam eiusdem; questiones de secretis mulierum eiusdem; tractatus de complexionibus cum glosa'. See B. Michael, op. cit., 783 and J. Agrimi, *Le* Quaestiones de sensu *attribuite a Oresme e Alberto di Sassonia*, cit., 37. Schum, who knows by the colophons that the commentaries on *De physiognomia* and on *De secretis mulierum* are attributed to Buridan, remarks that the *eiusdem* in item 6 of the list should be referred to Aristotle, and that the work in item 6 is by Buridan ('Aristotelis Iohanni Buridano auctori attributum'); consequently, the *eiusdem* in item 7 can be safely referred to Buridan. That Amplonius' attributions cannot be considered reliable is remarked by Thorndike, who writes: 'In the inventory of his manuscripts which Amplonius drew up in 1412 he briefly listed the two commentaries of Buridan [namely the commentaries on *De physiognomia* and on *De secretis mulierum*] as by Oresme, but this was no doubt the result of haste and carelessness, since he did not list the work by Dominic of Chivasso at all, while in the manuscript itself he explicitly ascribes both commentaries in question to Buridan at their close'. See L. Thorndike, 'Buridan's Questions on the *Physiognomy* Ascribed to Aristotle', cit., 100.

27 See B. Michael, op. cit., 790.

parallels with other texts that are certainly by Buridan. In fact, contrary to what Michael claims, it is indeed possible to compare at least certain parts of the text in E with other works by Buridan. I hope to make it clear that there are good reasons to confirm Buridan's authorship of the text in E.

2.3. Buridan's Authorship of the *Quaestiones de secretis mulierum*: a Case Study

2.3.1. *Overview*

In order to give additional evidence in favor of Buridan's authorship of the text in E, I will compare the first *quaestio* in the manuscript (*Utrum generatio animalium sit perpetua vel sempiterna*)[28] with *quaestio* II.13 of Buridan's *Quaestiones super libros De generatione et corruptione* (henceforth: QGC) (*Utrum sint generationes et corruptiones perpetuae*).[29]

As it is clear from the titles of the *quaestiones*, the two questions do not deal with precisely the same problem. In fact, q. II.13 of the *Quaestiones super libros De generatione et corruptione* discusses a more general problem (the perpetuity of generation and corruption in general) than the question in E (the perpetuity of the generation and corruption of animals). But besides this difference in scope, the two questions are closely connected: the question 'Whether animal generation is perpetual' is in fact a sub-case of the question 'Whether generation (and corruption) is perpetual'. This link is apparent by looking at the structure of q. 1 of the commentary on *De secretis mulierum* in E. This question is divided into two parts. In the first part, the author discusses the perpetuity of generation and corruption in general; in the second part, he applies his conclusions about generation and corruption in general to the particular case of the perpetuity of animal generation.[30]

For my purposes, it is particularly important to compare the first part of q. 1 in E with q. II.13 of QGC. In order to carry out this comparison, I will first present the formal structure of the two questions; second, I will highlight the close parallelism between the contents of the two questions.

---

28 See E, ff. 167^{r}–168^{r}.

29 John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros *De generatione et corruptione* Aristotelis, cit., 256–259.

30 '... primo videndum est in generali quomodo generationes in istis inferioribus sunt perpetue, et si sint, qualiter hoc intelligitur'. See E, f. 167^{r}. 'Secundo videtur de quesito'. See E, f. 167^{r}.

2.3.1.1. The Formal Structure of the Questions
Structure of q. 1 in E[31]
Utrum generatio animalium sit perpetua vel sempiterna

1. *Quod non: rationes (1–5)**
2. *Oppositum*
3. *Divisio quaestionis*
   - 3.1. *Articulus primus: Quomodo generationes in istis inferioribus sunt perpetuae*
     - 3.1.1. *Distinctiones*:
       - 3.1.1.1. De quaestione secundum fidem et secundum Aristotelem ('sub condicione')*
       - 3.1.1.2. Generatio simpliciter (substantiae) et secundum quid (accidentia)
     - 3.1.2. *Conclusiones*:
       - 3.1.2.1. *Conclusio* 1: Generatio secundum quid fuit perpetua
         - 3.1.2.1.1. *Distinctio*: generatio simpliciter posset imaginari tripliciter perpetua
           - 3.1.2.1.1.1. primo modo*
           - 3.1.2.1.1.2. secundo modo*
           - 3.1.2.1.1.3. tertio modo*
       - 3.1.2.2. *Conclusio* 2: Generatio (simpliciter) primo modo est perpetua*
         - 3.1.2.2.1. *Probatio**
       - 3.1.2.3. *Conclusio* 3: Generatio (simpliciter) secundo modo est perpetua*
         - 3.1.2.3.1. *Probatio prima*
         - 3.1.2.3.2. *Probatio secunda* *
       - 3.1.2.4. *Conclusio* 4: Generatio (simpliciter) tertio modo non est perpetua*
         - 3.1.2.4.1. *Probatio*
     - 3.1.3. *Objectio (contra conclusionem quartam) – responsio**
   - 3.2. *Articulus secundus: de quaesito (utrum generatio animalium sit perpetua vel sempiterna) – Conclusiones*
     - 3.2.1. *Conclusio* 1: Generatio animalium primo modo (cf. 3.1.2.1.2.1) est perpetua

31 The items marked with an asterisk will be examined in the next section, devoted to the parallelism between the two *quaestiones*.

3.2.2. *Conclusio* 2: Generatio animalium secundo modo (cf. 3.1.2.1.2.2) non est perpetua
3.2.3. *Conclusio* 3: Generatio animalium tertio modo (cf. 3.1.2.1.2.3) non est perpetua
4. *Ad rationes (1–3)*

Structure of q. II.13 in QGC
Utrum sint generationes et corruptiones perpetuae

1. *Quod non: rationes (1–6)**
2. *Oppositum*
3. *Distinctiones*:
   3.1. Perpetuum secundum identitatem numeralem
      3.1.1. In remanentia totali
      3.1.2. In successione partium ad invicem
   3.2. Perpetuum secundum identitatem specificam
      3.2.1. Continue
      3.2.2. Intercise*
4. *Conclusiones*:
   4.1. *Conclusio* 1:
      4.1.1. De conclusione secundum veritatem fidei*
      4.1.2. De conclusione secundum opinionem Aristotelis – Generatio et corruptio secundum identitatem specificam intercise (cf. 3.2.2.) sunt perpetuae*
         4.1.2.1. *Probatio prima**
         4.1.2.2. *Probatio secunda*
   4.2. *Conclusio* 2: generatio et corruptio sunt perpetuae ad sensum quod 'semper fuit generatio et corruptio'*
      4.2.1. *Probatio**
   4.3. *Conclusio* 3: nulla generatio fuerit semper*
5. *Objectio (contra conclusionem tertiam) – responsio**

2.3.1.2. The Parallelism between the Questions

1. The *quaestiones* in E and QGC employ the same basic framework to answer the question of the perpetuity of generation and corruption: they both explicitly present the distinction between the point of view of the faith and the Aris-

totelian point of view, and in both cases the author, by presupposing the eternity of the world, restricts his discussion to the purely philosophical domain, leaving aside the vantage point of the faith. This is clear from the following passage:[32]

E	QGC
[3.1.1.1.] Quantum ad primum sciendum quod *secundum fidem* concedendum est quod nulla generatio sit perpetua sicut nec perpetue est vel fuit vel erit generatio, et hoc principaliter in creaturis. Quod patet, quia ante mundi creationem, sicud credimus, nulla erat generatio creature nec alterius. *Sed questio intelligitur sub condicione, scilicet si mundus fuisset perpetuus, sicud opinabatur Aristoteles,* quid diceretur ad questionem nichil curando de fide, sed supponendo quod mundus fuisset eternus et erit et loquendo de generationibus naturalibus istorum inferiorum. (E, q. 1,10)	[4.1.1–4.1.2] Sit prima conclusio *secundum veritatem fidei* quod si mundus incepit, nullo dictorum modorum fuerunt generationes aut corruptiones perpetuae. Hoc non probo, quia credatis. *Sed si mundus fuisset aeternus, sicut videtur fuisse opinio Aristotelis,* tunc esset prima conclusio quod … (QGC, 257.20–23)

2. Among the arguments against an affirmative solution of the *quaestio*, two *rationes* (namely [1.4] in E and [1.1] in QGC, and [1.5] in E and [1.3] in QGC) are identical in doctrine and very similar in formulation. *Rationes* [1.4] and [1.1] also contain precisely the same reference. The only difference between the two passages comes from the fact that in E the author treats the particular topic of the perpetuity of animal generation, whereas in QGC the author speaks about the perpetuity of generation and corruption in general:

32 Both the numbers between square brackets preceding the quotations and within the quotations refer to the structure of the *quaestiones* as presented in the previous section. The numbers between curved brackets refer to the paragraphs of the edition of E as presented in the Appendix A of the present thesis and to the 2010 edition of QGC by Streijger, Bakker and Thijssen. Italics signify both those passages with literal similarities and those with similar conceptual content.

E	QGC
[1] *Arguitur quod non.* (E, q. 1, 2)	[1] *Arguitur quod non* quia: (QGC, 256.3)
[1.4] Quarto: *nulla mutatio preter motum localem est perpetua, ut patet octavo* Physicorum; *ergo nec generatio animalium, cum sit mutatio substantialis.* (E, q. 1, 6)	[1.1] *Octavo* Physicorum *determinatum est quod nullus motus vel etiam mutatio sit perpetua nisi motus locales circulares; igitur generationes et corruptiones, maxime substantiales, de quibus hic intenditur, non sunt perpetuae.* (QGC, 256.4–7)
[1.5] Quinto *per inductionem: nulla generatio animalium est perpetua, quia nec generatio istius animalis, et sic de singulis inductive.* (E, q. 1, 7)	[1.3] Tertio *per inductionem: generatio istius non est perpetua, nec generatio istius, et sic de singulis generationibus et similiter corruptionibus; igitur nullae generationes aut corruptiones sunt perpetuae.* (QGC, 256.12–14)

3. The second *conclusio* in E [3.1.2.2.] and the first *conclusio* in QGC [4.1.2] are identical in doctrine. They both affirm that, according to the same sense of 'perpetuity,' namely [3.1.2.1.2.1] in E and [3.2.2] in QGC, generation and corruption are perpetual. The two *conclusiones* are also based on the same proof and give exactly the same reference:

E	QGC
[3.1.2.2] Tunc est secunda conclusio quod primo modo [[3.1.2.1.2.1] *scilicet quod ante omnem generationem fuit alia generatio precedens et post omnem erit alia* (E, q. 1, 13)] generatio est perpetua et concederet Aristoteles suppositia eternitate mundi. [3.1.2.2.1] Et *hoc probatur primo* De generatione *ex parte materie, quia semper oportet generationem unius esse corruptionem alterius vel aliorum, aut formaliter aut concomitative, et e converso corruptionem unius esse generationem alterius vel aliorum; igitur ad illum sensum generationes sunt perpetue.* (E, q. 1, 14)	[4.1.2] … tunc esset prima conclusio quod perpetua fuit generatio et perpetua fuit corruptio ad praedictum sensum [3.2.2] *quod omnem generationem praecessit alia generatio et omnem corruptionem praecessit alia corruptio;* et ita suo modo a parte post. [4.1.2.1] Et *hoc probat Aristoteles primo* huius *per hoc quod semper generatio unius est corruptio alterius et corruptio unius est generatio alterius; igitur si aliquid corrumpitur, oportet aliquid generari, quod iterum corrumpetur, et generabitur aliud; et sic in perpetuum.* (QGC, 257–258.23–7)

4. The third *conclusio* in E [3.1.2.3] and the second *conclusio* in QGC [4.2] both sustain the perpetuity of generation according to the sense that 'there always has been generation' (i.e., the sense expressed both by [3.1.2.1.2.2] in E and by the *secunda*

conclusio [4.2] in QGC). The proofs, namely [3.1.2.3.2] in E and [4.2.1] in QGC, although not entirely similar in formulation, are identical in doctrine: they are both based on the idea of water cycle:

E	QGC
[3.1.2.3] Tertia conclusio: quod secundo modo intelligendo [[3.1.2.1.2.2] *quod semper fuit alia generatio et semper erit aliqua generatio* (E, q. 1, 13)] generationes sunt perpetue. Probatur, quia … [3.1.2.3.2] *semper sol et astra moventur super terram et mare; et sic semper sol ⟨et astra?⟩ elevant a mari aliquas partes terre vel aque eas corrumpendo et generando ex eis fumos et vapores, ut patet primo Meteororum; ergo semper sine interruptione temporis in hoc mundo fiunt generationes et corruptiones*. Et causa istius patet secundo *De generatione*, quia motus solis in circulo obliquo et aliorum planetarum, qui planete convertuntur ad unum tropicum et ibi generando aliqua in una parte terre corrumpunt generata quando moventur et declinant versus alium tropicum. (E, q. 1, 15)	[4.2] Secunda conclusio: generationes et corruptiones sunt perpetuae ad istum sensum quia *semper fuit generatio et corruptio*. Probatur quia: [4.2.1] *numquam est quin in partibus ad quas sol accedit evaporaretur aqua ex mare et generetur ex ea aer et in partibus oppositis econtra aer convertitur in aquam*. Immo si non essent nisi vetulae ponentes aquas super ignes, tamen semper fierent alicubi conversiones aquae in ignem vel in aerem et extinctiones et corruptiones ignium aut etiam generationes eorum. (QGC, 258.14–20)

5. The fourth *conclusio* in E [3.1.2.4] and the third *conclusio* in QGC [4.3] present the same structure. Both outcomes are at first negative, but then the author introduces a counter-argument based on the same doctrine: generation must be conceived not as simultaneous but as consecutive *secundum partes*. In both cases, the author uses the same example of the Seine:

E	QGC
[3.1.2.4] Quarta conclusio et ultima: *quod tertio modo* [[3.1.2.1.2.3] *quod generatio est perpetua sic quod aliqua generatio semper fuit vel aliqua semper erit, et ita de tempore presenti* (E, q. 1, 13)] *generatio non est perpetua* … [3.1.3] *Sed contra hoc arguitur quia: supponendo quod elementa fuerunt semper et quodlibet istorum semper generabatur secundum partes et similiter corrumpebatur, igitur alica generatio semper fuit; et sic consimiliter argueretur de generatione partium Secane.*	[4.3] Tertia conclusio ponitur ab aliquibus *quod nulla generatio fuerit semper. Et ego credo quod oppositum potest sustineri. Nam numquam Sequana generabatur, quia si Sequana generatur, hoc non est quia tota simul, sed quia pars post partem*. Et ita etiam de aere et de terra. Nam ille aer magnus in sphaera sua *numquam generatus fuit totus simul*, sed dicitur generatus, *quia pars post partem generatus est totus*. Ita fuit semper secundum Aristotelem et semper erit. Et est idem aer perpetue, sicut dicimus eandem

E	QGC
Dicendum quod, si mare semper fuisset, posset concedi quod generatio maris semper fuit, et non solum quod semper fuit generatio maris. Tunc, sicud patet ex secundo De *generatione*, et sicud diceret Philosophus, *nulla generatio alicuius corporis totius simul demonstrati fuit semper*. Et in hoc est differentia inter motum celi et generationem, quia *nullum corpus totale simul demonstratum generabatur semper*, sed spera celestis tota simul demonstrata movebatur semper. (E, q. 1, 17)	Sequanam nunc et in centum annis. (QGC, 258–259, 21–24)

From the previous comparison of five passages in q. 1 of E and q. II.13 of the QGC, it emerges that the two questions are very close to one another. First, they use the same general methodology: both questions draw a distinction between the point of view of the faith and the Aristotelian point of view, and both answer the question by taking the Aristotelian point of view as their starting point. Second, and more importantly, the two questions reach the same doctrinal conclusions through arguments that are very similar – often even identical – in *doctrine* and, sometimes, also in *formulation*. The arguments in both texts sometimes contain the same *references* and use the same *examples*. Therefore, given the fact that Buridan's authorship of the question in QGC is beyond doubt, and that the question in E is part of a commentary that is explicitly attributed to Buridan, it is safe to assume that Buridan is indeed the author of the question in E.

2.4. Conclusion

On the basis of the previous considerations, the two following conclusions can be drawn. First, the text contained in P cannot be ascribed to Buridan. Despite the fact that the attribution to Buridan is strongly suggested by the abbreviation 'Buri^{ni}' used both in the colophon and the list of chapters, textual evidence shows that the text in P is not a (literal) commentary on D*e secretis mulierum* at all, but a version of pseudo-Albertus' text itself, albeit different from the one edited by Barragán Nieto (BN). Second, the text contained in E can be safely ascribed to Buridan. The colophon in E attributes the commentary unambiguously to him (Buridan's name is written

in full) and this attribution is confirmed by a comparison of q. 1 in E with q. II.13 of Buridan's *Quaestiones super libros De generatione et corruptione*. For the time being, there is no reason to assume that the remaining seven questions in E are not also written by the author of q. 1. On the contrary: one finds a considerable number of cross-references in the questions in E[33] and the text as a whole does not show any breaks between the questions.[34]

Given that textual evidence clearly confirms Buridan's authorship of the *Quaestiones de secretis mulierum* in E, this thesis will be devoted to the analysis of the contents of this work and of other natural philosophical works by Buridan.

2.5. An Additional Note: The Relationship between Buridan's Questions and pseudo-Albertus Magnus' *De secretis mulierum*

In his edition of 2012, José Pablo Barragán Nieto identifies two classes of commentaries on pseudo-Albertus Magnus' *De secretis mulierum*: (1) four types of commentaries on pseudo-Albertus Magnus' *De secretis mulierum*, classified according to four different incipits, and (2) a group of commentaries on pseudo-Albertus Magnus' *De secretis*

33 Despite there are no references linking the qq. 2–8 to q. 1, the whole text is consequential and coherent. See the cross-references I have collected as an example: 'Si sic sequeretur quod non quilibet homo naturaliter generatus generaretur ex semine patris et matris quod est falsum per autorem in littera *et satis patuit in precedenti quaestione*'. See E, f. 169^{v}; 'in precedenti quaestione' refers to q. 3: *Utrum embryo generatur ex spermate viri et menstruo mulieris*. '*In praecedentibus quaestionibus visum est* quod ad generationem embrionis requiritur utriusque semen et qualiter sperma viri cumfert ad generationem'. See E, f. 171^{v}; 'in praecedentibus quaestionibus' refers to q. 3 and q. 4, respectively: *Utrum embryo generatur ex spermate viri et menstruo mulieris* and *Utrum post conceptionem sperma viri maneat in genito vel ingrediatur substantiam fetus*. '*Prius visum est* qualiter sperma confert ad generationem, nunc videndum est hoc de menstruo'. See E, f. 173^{r}; 'prius visum est' refers to q. 4: *Utrum post conceptionem sperma viri maneat in genito vel ingrediatur substantiam fetus*.

34 In q. 8 there is a *lacuna*: at the beginning of the *quaestio*, the author announces five points, but we can read only the first, the last part of the fourth, and the final point. This *lacuna* does not, however, cast doubt on the unity of the questions contained in E. In fact, the missing part does not represent a break in the continuity of the commentary, but just the loss of some part of q. 8. See E, ff. 174^{v}–175^{v}. It should be also noted that the text in E seems to be incomplete, since in q. 8, the last *quaestio* of the treatise, a following question is announced: '*Et in sequenti questione* de retentione menstruorum'. See E, f. 174^{r}. Nevertheless, the very last line of q. 8 suggests that the text in E was meant to end at that point: 'Ad sextam conceditur consequentia de mulieribus colericis quia in plenilunio augmentantur humores colerici ut dictum est etc. etc. etc.'. See E, f. 175^{v}.

mulierum generally defined as 'commentaries of another type'. He also lists a group of 'manuscript copies of other *secreta mulierum* distinct from the D*e secretis mulierum*', in which he includes the Erfurt text.[35] However, in my view, it is unlikely that Buridan's *quaestiones* do not constitute a commentary on pseudo-Albertus Magnus' D*e secretis mulierum* but on another text on women's secrets. This emerges, for example, when looking at the following points of the text: in q. 1, the *oppositum* is: 'Oppositum patet *per autorem capitulo primo*'.[36] Buridan is clearly referring to the *prologus* of pseudo-Albertus Magnus' work: 'Sicut scribitur secundo D*e generatione et corruptione*, generacio animalium sempiterna est et ideo in circuito'.[37] In q. 2, there is another reference to pseudo-Albertus Magnus' work: 'Tertio quia multociens in specie humana generantur monstra, ut videbitur post et patet in *textu*'.[38] Buridan is here referring to chapter six of the D*e secretis mulierum*, namely D*e generatione animalium monstruosum*.[39] In q. 3 one can read: 'Et illam receptionem seminum in matrice vocamus 'conceptio' vel 'concipere', ut patet in *textu*'.[40] Buridan is here referring to the following passage in chapter one of pseudo-Albertus Magnus' work: ''Concipere' autem vocatur quando illa semina in matrice, hoc est in tali loco deputato a natura ad fetum, recipiuntur'.[41] Finally, in q. 4, Buridan states 'Et tenet consequentia quia ut patet in *textu* post generationem embrionis matrix undique clauditur'.[42] Here he is referring again to chapter one of the D*e secretis mulierum*: 'Et postquam ista semina recepta sunt, matrix mulieris clauditur ex omni parte firmiter, ita quod nichil de semine recepto possit amitti'.[43]

We can therefore safely consider the Buridan's questions in E to be a commentary on pseudo-Albert the Great's treatise D*e secretis mulierum* and not on some other text.

35 See pseudo-Albert the Great, D*e secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 95–198 and 535–553.

36 See E, f. 167^{r}.

37 See pseudo-Albert the Great, D*e secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 218.18–19.

38 See E, f. 168^{r}.

39 See pseudo-Albert the Great, D*e secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 390 et seq. Even though the form 'monstruosum' occurs in texts (especially in poems), I would correct the edition with 'monstruosorum' as the regular form.

40 See E, f. 169^{r}.

41 See pseudo-Albert the Great, D*e secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 232.25–27.

42 See E, f. 170^{v}.

43 See pseudo-Albert the Great, D*e secretis mulierum*, ed. by J.P. Barragán Nieto, cit., 232.27–29.

CHAPTER 3

The Controversy between Philosophers and Physicians in Buridan's Works on Natural Philosophy

This chapter analyzes Buridan's reflections on problems related to the so-called 'hegemonic organ' and to the male and female roles in reproduction. Both problems belong to what is commonly labelled the 'controversy between philosophers and physicians'. First, I shall give a brief presentation of this controversy. Second, Buridan's views of the question of the hegemonic organ will be presented. This question comprises two problems, the problem of the localization of the common sense and the problem of the origin of veins and blood. Third, I shall present an account of Buridan's theory of generation, with particular attention to the roles of male and female in reproduction. The results of this analysis shall offer the first elements for our understanding of the relationship between medicine and philosophy in Buridan's works on natural philosophy and provide us with some traits of Buridan's description of the living organism.

3.1. The Controversy between Philosophers and Physicians

Late medieval Latin philosophers and physicians inherited from the ancient world a heterogeneous set of doctrines related to human nature, mostly belonging to the Aristotelian tradition and the Galenic tradition, both revised and reinterpreted by a variety of Arabic authors. The history of the Latin medieval reception of Aristotle's biological works and of the Galenic *corpus* is indeed a complicated one; this history becomes even more complicated when considering the roles of Arabic authors. For, Aristotelian and Galenic works on biological aspects of living organisms were translated into Latin at different moments, from different languages and, as a consequence, in different versions. Late medieval Latin scholars also had at their disposal Latin translations of those Arabic works that played a crucial role in reinterpreting the Aristotelian and Galenic heritage: Avicenna's *Canon* and Averroes' *Colliget*. These works presented their own views on the nature and functioning of living organisms by introducing new accounts besides Aristotelian and Galenic concepts, new problems to deal with, and – often – opposite solutions of the issues on which the Aristotelian and the Galenic traditions were in disagreement.[1]

1 Literature on the reception of the Aristotelian scientific *corpus* and the Galenic and medical doctrines

With all this material at their disposal, later medieval Latin philosophers and physicians tried to build their own views of the nature of the human body. The impression they had when dealing with Aristotelian and Galenic texts was, of course, that Aristotle and Galen had contrasting views with respect to the life functions of

---

in the Latin Middle Ages is vast. This applies also to the literature on the Arabic readings of the ancient scientific *corpus* and its reception in the Latin Middle Ages. Therefore, the following titles do not aim to be exhaustive but just works that are masterpieces in the field and works I considered useful for a general understanding. Additional titles will be listed in connection to specific issues concerning natural philosophy and medicine in the Middle Ages as they will be addressed, each time, in this thesis. On the medieval reception (and translation) of the ancient natural philosophical and medical thought, on the reception (and translation) of the Arabic natural philosophical and medical works in the Latin Middle Ages, on the natural philosophical and medical works read in the medieval schools and universities, and on the ways in which they were read (more specifically, on the typologies of natural philosophical and medical writings in the Middle Ages), see the following titles: S.D. Wingate, *The Mediaeval Latin Versions of the Aristotelian Scientific* corpus: *with Special Reference to the Biological Works*, The Courier Press, London 1931 (and subsequent editions); the contributions in C. Steel, G. Guldentops and P. Beullens, *Aristotle's Animals in the Middle Ages and Renaissance*, Leuven University Press, Leuven 1999 and in R. Beyers, *Tradition et traduction: les textes philosophiques et scientifiques grecs au Moyen Age latin. Hommage à Fernand Bossier*, Leuven University Press, Leuven 1999; P.-G. Ottosson, *Scholastic Medicine and Philosophy. A Study of Commentaries on Galen's* Tegni *(ca. 1300–1400)*, Bibliopolis, Napoli 1984; R.K. French, '*De Juvamentis Membrorum* and the Reception of Galenic Physiological Anatomy', *Isis*, 70, 1 (1979), 96–109; the contributions in G. Fioravanti, C. Leonardi and S. Perfetti (eds), *Il commento filosofico nell'occidente latino (secoli 13.–15.): atti del colloquio Firenze-Pisa, 19–22 ottobre 2000, organizzato dalla* SISMEL *(Società Internazionale per lo Studio del Medioevo Latino) e dalla* SISPM *(Società Italiana per lo Studio del Pensiero Medievale), sotto l'egida della* SIEPM, Brepols, Turnhout 2002 (see, especially, on late medieval medical commentaries and medical writings, D. Jacquart, 'Commentaire et écriture médicale aux XIVe et XVe siècles', *ibidem*, 43–60); E. Montero Cartelle, *Tipologia de la literatura médica latina: Antigüedad, Edad media, Renacimiento*, Brepols, Turnhout 2010; N.G. Siraisi, *Medieval and Early Renaissance Medicine: an Itroduction to Knowledge and Practice*, The University of Chicago Press, Chicago, 1990; N.G. Siraisi, *Taddeo Alderotti and his Pupils. Two Generations of Italian Medical Learning*, Princeton University Press, Princeton 1981; N.G. Siraisi, 'Medicine and Surgery', in *Arts and Sciences at Padua: the Studium of Padua before 1350*, Pontifical institute of Mediaeval Studies, Toronto 1973, 141–171; D. Jacquart and F. Micheau, *La médecine arabe et l'Occident médiéval*, G.-P. Maisonneuve et Larose, Paris 1990; D. Jacquart, 'La scolastica medica', in: M.D. Grmek (ed), *Storia del pensiero medico occidentale, 1. Antichità e Medioevo*, Roma-Bari, Laterza 1993, 261–322; Ead., *La mèdecine médiévale dans le cadre parisien, XIV^{e}–XV^{e} siècle*, Fayard, Paris 1998; Ead., *Le milieu médical en France du XIIe au XVe siècle*, Librairie Droz, Genève 1981; C. O'Boyle, *The Art of Medicine. Medical Teachings at the University of Paris, 1250–1400*, Brill, Leiden 1998; V. Bullough, *Universities, Medicine and Science in the Medieval West*, Ashgate, Aldershot 2004; C. Crisciani and J. Agrimi, Edocere medicos: *medicina scolastica nei secoli XIII e XV*. Guerini e Associati, Napoli 1998; J. Agrimi and C. Crisciani, 'La medicina scolastica: dalla scuola di Salerno alle facoltà universitarie', in: G.P. Brizzi and J. Verger (eds), *Le università dell'Europa. Le scuole e i maestri: il Medioevo*, Pizzi Editore, Milano 1994.

organisms, leading at least to a potential conflict between authorities. This situation became even more complicated by the Arabic interpretations Latin scholars could not avoid to take into account. This portion of the history of ideas is usually labelled the 'controversy between philosophers and physicians'.[2] Danielle Jacquart and François Micheau even defined the period between 1270 and 1320 as 'times of controversy'.[3] These labels are certainly useful: the general impression is (unsurprisingly) that physicians supported the Galenic principles more firmly than philosophers did, and that philosophers tried harder to save the Aristotelian heritage than physicians cared to do. Nevertheless, the controversy should be seen more as a conflict between sources and traditions, to which medieval Latin scholars generally referred as '*opinio philosophorum*' and '*opinio medicorum*', than as a fight opposing philosophers and physicians at the universities. First, this comes to light from the fact that both medieval Latin philosophers and physicians, clearly perceiving the conflicts between the two traditions and often following an Avicennian path, usually tried to harmonize the Aristotelian view with the Galenic one. This was for example what Peter of Spain did in his works on natural philosophical and medical topics, and what Albert the Great proposed in his philosophical reading of Aristotle's *De animalibus*. Later, by the end of the thirteenth and the beginning of the fourteenth century, we find Peter of Abano's *Conciliator differentiarum philosophorum et praecipue medicorum* as the major

2 The label 'controversy between philosophers and physicians' is used by scholars nowadays but the idea of 'controversy' was already expressed in the famous work on natural philosophy and medicine by Peter of Abano: the *Conciliator*. Among the several early modern printed editions of this work, three editions, the most recent, have the word 'controversy' in their title (*Conciliator controversiarum quae inter philosophos et medicos versantur*, Venezia, 1548, 1554, and 1564/65), while the oldest editions present the word 'difference' (*Conciliator differentiarum philosophorum et praecipue medicorum*). On the controversy between philosophers and physicians, see J. Chandelier, 'Medicine and Philosophy', in H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 735–742; N.G. Siraisi, *Taddeo Alderotti and his Pupils. Two Generations of Italian Medical Learning*, Princeton University Press, Princeton, New Jersey 1981, esp. 186–202; Ead., *Medieval and Early Renaissance Medicine: an Introduction to Knowledge and Practice*, The University of Chicago Press, Chicago, 1990, esp. 80–82; D. Jacquart and F. Micheau, *La médecine arabe et l'Occident médiéval*, G.-P. Maisonneuve et Larose, Paris 1990, esp. 167–203; D. Jacquart, 'La scolastica medica', in: M.D. Grmek (ed), *Storia del pensiero medico occidentale, 1. Antichità e Medioevo*, Roma-Bari, Laterza 1993, 261–322, esp. 284–287; P.-G. Ottosson, *Scholastic Medicine and Philosophy. A Study of Commentaries on Galen's* Tegni *(ca. 1300–1400)*, Bibliopolis, Napoli 1984, esp. 219–239; see also R. Martorelli Vico, 'La medicina scolastica tra galenismo e aristotelismo', *Studi Medievali*, 41 (2000), 311–338; above all, see the detailed studies by M. de Asúa listed in the footnote 4 below in this section.

3 See D. Jacquart and F. Micheau, *La médecine arabe et l'Occident médiéval*, G.-P. Maisonneuve et Larose, Paris 1990, 176–178.

example of this trend of reconciliation, as the title of the work evidently expresses.[4] Second, there were important institutional frameworks in which the Faculty of Arts and the Faculty of Medicine were not sharply distinguished. In the case of the Italian universities, scholars writing on theoretical medicine were also natural philosophers. Nancy Siraisi has extensively documented how late medieval Italian scholars described the human body by combining the medical and philosophical traditions.[5] Therefore, it is clearly not possible to apply, in these cases, the idea of a *real* controversy between philosophers and physicians.

The idea of such a 'controversy' could be potentially much more evident when considering universities north of the Alps, most notably the University of Paris, where the two faculties were neatly distinct. Yet, with the respect to this controversy, the Parisian situation has received much less scholarly attention than the Italian one, at least as far as the philosophers' side is concerned. In fact, the use Parisian medical authors made of Aristotelian-philosophical views of the body, potentially in contrast with Galen, has been well described, above all, by Danielle Jacquart.[6] However, we still know very little concerning the other side, namely the use of

4 On the topic of the controversy between philosophers and physicians in Peter of Spain, see especially M. de Asúa, 'El Comentario de Pedro Hispano sobre la *Isagoge* de Johannitius. Transcripción de las *Quaestiones* sobre la controversia entre médicos y filosofos', *Patristica et Mediaevalia*, 17 (1996), 59–66; Id., 'El Comentario de Pedro Hispano sobre el *De animalibus*. Transcripción de las *Quaestiones* sobre la controversia entre médicos y filosofos', *Patristica et Mediaevalia*, 14 (1995), 45–66; Id., 'Medicine and Philosophy in Peter of Spain's Commentary on *De animalibus*', in: C. Steel, G. Guldentops and P. Beullens (eds), *Aristotle's Animals in the Middle Ages and Renaissance*, Leuven University Press, Leuven 1999, 189–211; Id., 'Peter of Spain's Handling of Authorities in his Commentary on the *Isagoge* of Johannitius', DYNAMIS, 20 (2000), 107–133; Id., 'The Relationship between Medicine and Philosophy in Peter of Spain's Commentary on the *Articella*', *Papers of the Articella Project Meeting. Cambridge, December 1995*, Wellcome Unit for the History of Medicine, CSIC Barcelona Department of History of Science, Cambridge-Barcelona 1998, v-52. On the controversy between philosophers and physicians in Albert the Great, see especially N.G. Siraisi, 'The Medical Learning of Albertus Magnus', in: A. Weisheipl (ed), *Albertus Magnus and the Sciences*, Pontifical Institute of Mediaeval Studies, Toronto 1980, 379–440 and M. de Asúa, 'War and Peace. Medicine and Natural Philosophy in Albert the Great', in: I.M. Resnick (ed), *A Companion to Albert the Great. Theology, Philosophy, and the Sciences*, Brill, Leiden-Boston 2013, 269–297. On the controversy between philosophers and physicians in Peter of Abano, see Id., 'Pedro de Abano y la controversia entre médicos y filósofos', *Patristica et Mediaevalia*, 18 (1997), 49–66.

5 N.G. Siraisi, *Taddeo Alderotti and his Pupils. Two Generations of Italian Medical Learning*, Princeton University Press, Princeton, New Jersey 1981. See also Siraisi's considerations in Ead., 'Medical Scholasticism and the Historians', in N.G. Siraisi (ed), *Medicine in the Italian Universities, 1250–1600*, Brill, Leiden 2001, 140–156.

6 See especially D. Jacquart, *La médecine médiévale dans le cadre parisien, XIVe–XVe siècles*, Fayard, Paris 1998.

medicine made by philosophers at the Faculty of Arts in Paris.[7] An outline of the ways Parisian natural philosophers made use of medical knowledge, more specifically of their positions in the so-called 'controversy between philosophers and physicians', is likely to yield important information about the epistemological relationship between natural philosophy and medicine in the late Latin Middle Ages. In addition, it can provide us with a more thorough understanding of the evolving features of natural philosophy, as a discipline, over time. The present case study of John Buridan's natural philosophy and its relation to medicine moves exactly in this direction.

As previously remarked, medieval scholars' solutions of the so-called 'controversy between philosophers and physicians' were almost all oriented at harmonizing the authorities. In this sense, it is possible to think that a study about the relationship between natural philosophy and medicine based on the solution authors gave to the controversy could be useless. In fact, if the authors always tried to reconcile the opposite views of the philosophical and the medical traditions, there is nothing to infer from the use a Master of Arts, John Buridan in this case, made of medicine in his writings on natural philosophy. This kind of objection, which can arise very easily when trying to evaluate medieval philosophy from the viewpoint of the originality of the results more than from the viewpoint of the profoundness of the thought, can be answered as follows. There is not one unified way to harmonize conflicting sources. Many authors deal in different ways with disagreeing authorities. Thus, it is not the simple fact that medieval authors generally tended to harmonize the sources that is interesting, but the precise ways they did this. As Danielle Jacquart remarks, within the general trend of harmonization, we find differentiated ingenious solutions.[8] By studying the exact ways of dealing with conflicting statements made by different authorities, the question of originality also arises in a more interesting way. It is therefore useful to describe *how* a natural philosopher, in our case John

7 On this side, see J. Agrimi's contribution mentioned in the Introduction of this thesis, *supra* 23. The institutional and epistemological relationship between (natural) philosophy and medicine in the Middle Ages is no doubt a very complex topic. I refer the reader to the aforementioned works by Agrimi and to the literature listed in footnotes 1 and 2 here above to collect elements on this relationship. Finally, I refer here to a few more contributions that offer useful overviews on this issue, i. e. P. Kibre, 'Arts and Medicine in the Universities in the Later Middle Ages', in: P. Kibre (ed), *Studies in Medieval Science. Alchemy, Astrology, Mathematics and Medicine*, Hambledon Press, London 1984, 214–227; C. Crisciani, 'Medicina e filosofia nel Medioevo: aspetti e fasi di un rapporto discusso', *Castelli di Yale*, 9 (2008), 9–35 and M.R. McVaugh, 'Medicine and Art in the Thirteenth-century Paris', in: E.Y. Spencer (ed), *Crossing Boundaries at Medieval Universities*, Brill, Turnhout 2011, 189–212.

8 D. Jacquart, 'Coeur ou cerveau? Les hésitations médiévales sur l'origine de la sensation et le choix de Turisanus', *Micrologus*, 11 (2003), 73–95, 73.

Buridan, manages to reconcile (apparently) conflicting sources, and in which ways and to what extent he allows the medical tradition to interact with the *corpus* of Aristotelian natural philosophy.

The most vigorously debated topics about which the philosophical tradition and the medical tradition disagreed were the question of the so-called 'hegemonic organ' and the problem of the male and female roles in reproduction. For, the Aristotelian and the Galenic tradition transmitted different, and often opposite, views on these points.

The question of the 'hegemonic organ' refers to the problem of which organ in the body plays the most prominent role in the exercise of the various vital functions of an organism, such as sensation, nutrition, and reproduction. The Aristotelian side claimed the absolute primacy of the heart over the other corporeal members: the heart was conceived as the promoter and the ultimate location of all vital operations. The Galenic side, on the contrary, saw the vital functions as carried out by the different main organs of the body, namely brain, heart, liver and testes, without ascribing to the heart an exclusive power. The issue of the hegemonic organ contains some sub-issues, like the problem of the localization of the common sense, the origin of nerves, and the origin of veins and blood. All these issues were articulated in terms of the opposition between the heart and another organ (the brain, the liver) considered, from the Galenic viewpoint, much more properly linked to a certain biological process than the heart.

The problem of the male and female roles in reproduction refers to the neatly different roles ascribed by Aristotle and Galen to man and woman in the process of the generation of the embryo. In this discussion, the most relevant issues were whether the male sperm provides any material contribution to generation and whether the female emits a generative seed. The Aristotelian answer to both questions was negative, while the Galenic one was clearly affirmative.

In the next sections of this chapter, we shall see where and how Buridan dealt with the issues of the hegemonic organ and the male and female roles in reproduction, and to what extent Buridan's reflections on these topics show us his position vis-à-vis the relationship between natural philosophy and medicine.

3.2. The Hegemonic Organ

In his works on natural philosophy, Buridan addresses the problem of the localization of the common sense and the issue of the origin of veins and blood. The first problem

pertains to the theory of human sensitive cognition and it involves some important psychological topics, such as sense perception and cognition mechanisms, the process of memory, and phenomena related to sleep and dream. The second problem deals with the anatomical description of the production and distribution of blood in the body. It concerns the diverging ways in which the philosophical and medical traditions conceived the process of nutrition and digestion. The present section will be devoted to Buridan's way of dealing with these two problems.

3.2.1. *The Localization of the Common Sense*

3.2.1.1. The Common Sense and the Corporeal Localization of Sensation

The common sense, *koinē aísthēsis* in Greek (translated into Latin as *sensus communis*), refers to a particular function, a perception ability, whose primary role is the coordination and composition of the perceptual elemental stimuli coming from the external world to be used for higher mental processes.[9] The history of this concept has been traced back to Aristotle. Nevertheless, it is well known that Aristotle did not treat this concept extensively or in a unique way. The difficulty in reconstructing the Aristotelian concept of the common sense is, first of all, a problem of terminology. Aristotle, in fact, referred to the 'common sense' in different ways throughout his texts, without using one and the same phrase. Occurrences of this concept can be found in the *De anima*, in the *De partibus animalium*, and in the *Parva naturalia*.[10] Second, the difficulty arises from the different ways Aristotle described the mechanisms of sensation in the *De anima* and in the *Parva naturalia*: due to these differences, also the features Aristotle ascribed to the common sense do not always overlap. Briefly, it can be said that Aristotle ascribed to the common sense the following roles: the perception of the *sensibilia communia* and of the *sensibilia accidentalia*, the phenomenon

9 For the purposes of this section, I shall outline the main aspects of the Aristotelian concept of 'common sense'. This brief overview does not aim to be thorough and complete, but just useful to trace some background of the issue of the common sense in Buridan's texts. In my exposition, I am following especially P. Gregoric, *Aristotle on the Common Sense*, Oxford University Press, Oxford 2007 and D. Heller-Roazen, 'Common Sense. Greek, Arabic, Latin', in: S.G. Nichols, A. Kablitz and A. Calhoun (eds), *Rethinking the Medieval Senses: Heritage / Fascinations / Frames*, John Hopkins University Press, Baltimore 2008, 30–50. See also Ead., *The Inner Touch. Archaeology of Sensation*, Zone Books, New York 2007.

10 See Arist., *De an.*, III. 1, 425a29, Arist., *De part. an.*, IV.10, 686a31, Arist., *De mem.*, 1, 450a11. For a discussion of the occurrences of the concept of 'common sense' in the various Aristotelian texts, see especially P. Gregoric, op. cit., 65–125.

of the complex sensation, and the task of perceiving that we are perceiving, i. e., a kind of self-consciousness of perception.

As a premise to explain the aforementioned roles of the common sense, it must be said that, according to Aristotle, the object of perception (*aisthētón*) can be threefold: the proper (*ídion*) sensible, the common sensibles (*koinà aisthēta* or *sensibilia communia*), and the sensibles 'by accident' (*katà symbebēkós* or *sensibilia accidentalia*). The proper sensible is the sensible that has a one-to-one correspondence with each specific external sense (sight, touch, hearing, taste, smell). The concept of 'common sensibles', instead, refers to sensible phenomena that go beyond the one-to-one relation between one sense and its specific object: such phenomena are motion, rest, figure, magnitude, number, and unity. To give an example, we do not perceive that someone is moving or at rest by means of only one specific external sense. The concept of 'sensibles by accident', finally, refers to perceptual phenomenon in which it happens to us to perceive something 'incidentally' *while* we are perceiving a proper sensible: the Aristotelian example is that we perceive (through vision) a white object; the incidental sensible is that this white object is the son of Diares.[11]

To come back to the functions of the common sense listed above, the first one is the perception of the common sensibles and of the sensibles 'by accident'. As far as the first case is concerned, motion, rest, figure, magnitude, number, and unity cannot be perceived, according to Aristotle, neither by one of the external senses, neither by a supposed sixth additional sense. A further function or perception ability, which involves *all* the five senses, is required, and this is, precisely, the 'common sense'. This perception ability coordinates especially the senses of sight and touch: the common sensibles are not the proper sensibles of sight and touch but, in Aristotle's view, no object perceived by sight and touch can be perceived without the simultaneous perception of motion, rest, figure, magnitude, number, and unity. The second case concerns the perception of the sensibles 'by accident'. Given that each sense has just a one-to-one relation to its own proper object of perception (i.e., with the object it is apt to perceive), the sensibles 'by accident' cannot be perceived by the same sense perceiving the proper sensible they come with. Thus, they require another perception ability in order to be sensed: the common sense. In the case of the perception of the sensibles 'by accident', in particular, the common sense has the power of unifying two sensibles: the one which is 'proper' with the one which is just 'accidental'.[12]

---

11 See Arist., *De anima*, II.6, 418a20–24.

12 See Gregoric's interpretation of the role of the common sense in respect to these functions in P. Gregoric, *Aristotle on the Common Sense*, cit., 193–201.

According to Aristotle, the common sense is also involved in explaining the phenomena related to complex sensation. Specifically, the common sense is required to coordinate and differentiate the sensations coming from and proper to the five external senses. In fact, we are able to perceive, simultaneously, several characteristics of an object, characteristics we perceive by means of different external senses (for example: we can perceive, all together, the sweetness, brownness and fragrance of a cake).[13] In addition, we are able to distinguish between different qualities of the same object (we can distinguish the sweet taste from the brown color and from the nice smell of the cake). Both the act of coordinating the sensations and the awareness of the differences between perceptions cannot be ascribed to a single external sense. Each external sense, in fact, cannot do more than perceive its own proper sensible. A common sense is therefore required.[14]

Aristotle also links the common sense to the 'perception of perception', in other words, to our capacity of being aware that we are sensing. How can this awareness be explained? Aristotle shows that this capacity could be explained either by saying that another sense (another in respect to the one by means of which we are sensing a particular object in a particular situation) is perceiving that we are perceiving, or that the sense itself involved in the perception is the one perceiving that we are perceiving (for example: the sense of sight is perceiving that we are seeing). The first option, nevertheless, would lead to an infinite regress because we could ask whether this sense, on its turn, perceives that it is perceiving the act of perception of another sense. The second case is also rejected: in fact, sight would have two objects of perception (what we see and the perception that we are seeing), and this is in contrast with the Aristotelian claim that each sense has *only one* proper object of sensation. Therefore, the common sense, not coinciding with any particular sense, but just coordinating all of them, is seen as the appropriate theoretical tool to solve the *impasse*.[15] It has been suggested that Aristotle's recognition of an ability of perceiving that we are perceiving can be interpreted in terms of a proto concept of 'consciousness'.[16]

---

13 Simultaneous perception is especially addressed by Aristotle in Arist., *De sensu*, 7, 477a13–449a20.

14 See P. Gregoric, *Aristotle on the Common Sense*, cit., 129–162.

15 The famous passage on 'perceiving that we see' is in Arist. *De anima*, III.2, 425b12–25.

16 The possibility of recognizing the concept of 'consciousness' in Aristotle's thought has been widely debated by scholarship with different outcomes and interpretations. This issue will not be summarized here because it is not related to the contents of this chapter. On this topic, I refer the reader to the following literature: V. Caston, 'Aristotle on Consciousness', *Mind*, 111 (444), 2002, 751–815; J. Sihvola, 'The Problem of Consciousness in Aristotle's Psychology', in: S. Heinämaa, V. Lähteenmäki and P. Remes (eds), *Consciousness. From Perception to Reflection in the History of Philosophy*, Springer,

The Aristotelian texts left several important issues open, for example: which and how many functions can we precisely ascribe to the common sense? Is the common sense a specific type of sense over and above the five external senses, or is it just a phase of the perceptual process to be thought as a unity? And *which is the corporeal localization of this function*? The present section of my thesis will be focused on this last issue, crucial to reconstruct Buridan's view of the relation between natural philosophy and medicine. In fact, in the eyes of medieval thinkers, the issue of the corporeal localization of the common sense opposed the philosophical tradition (incarnated by the opinion of Aristotle) and the medical tradition (embodied by the opinion of Galen), the first one locating the common sense in the heart and the second one claiming the common sense to be located in the brain. However, the aforementioned *opinio philosophorum* and *opinio medicorum* on the localization of the common sense were mainly patterns through which medieval authors (over-) simplified a much more complex heritage of ancient debates and doctrines about the primacy of the organs in the body.[17] Aristotle in fact only superficially addresses the specific question on the localization of the common sense; neither do we find this issue precisely treated by Galen. What is traceable in Aristotle's and Galen's texts, and without linearity, is a collection of reflections on the link between the mechanisms of sensation and their corporeal organs.

In Aristotelian natural philosophy, the heart plays a central role as it is considered the center of movement, sensation, nutrition, and generation. This centrality is underlined throughout Aristotle's texts and was recognized without hesitations by Aristotle's medieval interpreters. Aristotle makes it clear that the heart has an indisputable primacy concerning the faculty of perception.[18] This primacy is basically linked to the heat, which represents the most specific characteristic proper to heart

---

Dordrecht 2007, 49–65. For an overview of the issue of consciousness in medieval texts, see ch. IV ('La connaissance de soi. Sens et Reflexivité') in C. di Martino, Ratio particularis. *La doctrine des sens internes D'Avicenne a Thomas D'Aquin. Contribution a l'etude de la tradition arabo-latine de la psychologie d'Aristote*, Vrin, Paris 2008, 153–162. Concerning Buridan, this topic has been addressed by J. Zupko, 'Self-Knowledge and Self-Representation in Later Medieval Psychology', in P.J.J.M. Bakker and J.M.M.H. Thijssen (eds), *Mind, Cognition and Representation: The Tradition of Commentaries on Aristotle's* De Anima, Ashgate, Aldershot 2007, 87–107 and by S. Brower-Toland, 'Self-Knowledge and the Science of the Soul in Buridan's *Quaestiones De Anima*', in: G. Klima (ed), *John Buridan's Question on the Soul*, Springer, Dordrecht, forthcoming.

17 On these doctrines, see P. Manuli and M. Vegetti, *Cuore, sangue e cervello. Biologia e antropologia nel pensiero antico*, Episteme Editrice, Milano 1977.

18 See Arist., *De part. an.*, III.3, 665a11–13, Arist., *De gen. an.*, II.6, 743b25–26, Arist., *De part. an.*, II.10, 656a28.

in Aristotelian philosophy. Sensation, in fact, can only occur when heat is involved.[19] For this reason, the brain, described as the coldest organ in the body, is excluded from the processes of sensation.[20] In Galenic thought, on the contrary, sensation is not primarily linked to the heart, neither is the heart considered, in general, to be the hegemonic organ of the body. According to Galen, in fact, the living being has three principles, respectively located in the brain, the heart and the liver. The principle located in the brain is responsible for sensation and voluntary movement; the principle located in the heart provides heat and pulsation to the whole body; the principle located in the liver is linked to blood production, and, more in general, to nutrition.[21] Galen, thus, rejects Aristotle's monism in favor of a pluralism of organs, each of them performing some specific tasks Aristotle all ascribes to the heart. With respect to sensation, as already remarked, Galen refers to the brain as the localization of the principle of sensation. Moreover, he speaks about a 'common faculty' reaching the organs of the external senses from the brain, through the nerves.[22] It is also known that Galen associates the three major organs to different spirits: the 'psychic spirits' are supposed to originate in the brain and to pass through the nerves in order to transmit sensation and movement.[23]

Medieval authors were aware of these different views on the localization of the center of sensation as they were found in Aristotle's and Galen's accounts, views that were transformed by them, respectively, into the *opinio philosophorum* and the *opinio medicorum*, and became the object of one of the most disputed issues of the 'controversy between philosophers and physicians'.

3.2.1.2. The Internal Senses

In the Middle Ages, the issue of the corporeal localization of the sensation processes was mostly framed within the broader topic of the internal senses. The concept of 'internal senses' refers to some phenomena belonging to the domain of perception not immediately linked to the five external senses. These mechanisms were thought to

19 On the heart as the principle of the heat, see Arist., *De part. an.*, III.7, 670a25 ff., Arist., *Sens.*, 2, 439a 3–4.

20 See Arist., II.7, *De part. an.*, 652a35–652b6.

21 See Galen, PHP, VII, 3.

22 See Galen, PHP, VII, 6.

23 O. Temkin, 'On Galen's Pneumatology', *Gesnerus*, 8, 1–2 (1951), 180–189. On Galen's view of sensation and the brain, see the following titles: J. Rocca, *Galen on the Brain. Anatomical Knowledge and Physiological Speculation in the Second Century* AD, Brill, Leiden 2003, and the sections by P. Donini ('Psychology') and J. Rocca ('Anatomy'), in: R.J. Hankinson (ed), *The Cambridge Companion to Galen*, Cambridge University Press, Cambridge 2008, 184–209 and 242–262.

take place in inner parts of the living being.[24] The term 'internal senses' is used neither in Aristotle nor in Galen's texts. The term and the concept both started entering the philosophical vocabulary with the medieval Arabic authors, especially with Avicenna, considered the thinker who properly started the medieval debate on the internal senses. These 'post-sensationary faculties'[25] or 'class of cognitive faculties'[26] we call 'internal senses' are of different types. Various authors classified and named the internal senses in several ways, including 'common sense' as well as 'cogitation,' 'estimation,' and 'memory.' These terms are present in many, often not coinciding, translations in Arabic, Hebrew, and Latin.

It has been shown that the history of the concept of 'internal senses' can be traced back to authors in Antiquity and in the earlier Middle Ages. The concepts of 'imagination', 'cogitation', and 'memory' and their workings are indeed present in Aristotle's *De anima* and *De memoria et reminiscentia*. It is also known that Augustine spoke about an 'interior *sensus*' and an 'interior *vis*'.[27] However, as already mentioned, it is widely recognized that Avicenna provided the first developed and articulated account of the internal senses. In his texts, we can find different classifications of the internal senses, but his teaching can be standardly summarized as follows. Avicenna presents a fivefold classification of internal senses: common sense, retentive imagination, compositive imagination, estimation, and memory. He gives a description of the common sense close to the Aristotelian one, by considering it as a coordinator of

24 On the internal senses in the Middle Ages, see especially H.A. Wolfson, 'The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts', *The Harvard Theological Review*, 28, 2 (1935), 69–133; E.R. Harvey, *The Inward Wits: Psychological Theory in the Middle Ages and the Renaissance*, Warburg Institute, London 1975; C. di Martino, Ratio particularis. *La doctrine des sens internes d'Avicenne à Thomas d'Aquin: contribution à l'étude de la tradition arabo-latine de la psychologie d'Aristote*, Vrin, Paris 2008; S. Kemp and G.J.O. Fletcher, 'The Medieval Theory of the Inner Senses', *The American Journal of Psychology*, 106, 4 (1993), 559–576; M.A. Gaffney, *The Psychology of the Inner Senses*, Herder, St. Louis (MO) 1942; S. Kemp, *Medieval Psychology*, Westport, Greenwood (CT) 1990 (especially ch. 4); N.H. Steneck, *The Problem of the Internal Senses in the Fourteenth Century*, unpublished Ph.D. thesis, University of Wisconsin 1970; S. Knuuttila and P. Kärkkäinen, 'Medieval Theories of Internal Senses', in: S. Knuuttila and J. Sihvola (eds), *Sourcebook for the History of the Philosophy of Mind. Philosophical Psychology from Plato to Kant*, Springer, Dordrecht 2014, 131–145; P. Kärkkäinen, 'Internal Senses', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 564–567. For this brief overview, I am especially following H.A. Wolfson, 'The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts', cit., and P. Kärkkäinen, 'Internal Senses', cit.

25 As labelled by H.A. Wolfson, 'The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts', cit., 69.

26 As labelled by P. Kärkkäinen, 'Internal Senses', cit., 564.

27 See H.A. Wolfson, 'The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts', cit., 71–72.

the impressions coming from the external world by means of the external senses. In Avicenna's account, the retentive imagination retains those impressions, while the compositive imagination works on them by producing images. The 'faculty' of estimation is connected to the (animal and human) capacity of linking the perception processed by the imagination with particular 'feelings' which are supposed to guide the action (these 'feelings' are technically called 'intentions' [*intentiones*]): the classical medieval example is that of the sheep connecting the image of the wolf to a feeling of danger, and running away. Finally, memory has the role of storing the intentions.

As Harry Wolfson remarked, Avicenna often combines two ways of dealing with the internal senses: a physiological way (paying attention to the corporeal localization of the internal senses) and a more philosophical way (considering the function of each internal sense *per se*).[28] These approaches surface in later discussions of the internal senses, and this is why, among Latin medieval philosophers, the problem of the corporeal localization of sensation (and, in particular, of the localization of the common sense) was framed within a broader discussion about the number and functions of the internal senses. The various classifications of the internal senses proposed after Avicenna turned out to be interpretations, critiques, and modifications of his model. The most noticeable difference between Avicenna and Averroes' accounts, for example, is Averroes' rejection of estimation as a separate internal sense: according to him, estimation has to be reduced to imagination. Scholars have devoted particular attention to Albert the Great's account of the internal senses, which represents the clearest example of how Latin medieval authors dealt with the topic. Albert pays attention to both philosophical and physiological-anatomical aspects of the issue and proposes an original interpretation of ancient and Arabic sources.[29] It is not my aim to examine the views of the internal senses after Albert the Great. What it is important for me, is to summarize Buridan's account of internal senses. In fact, it is within this framework that Buridan deals with the topic of the localization of the common sense.

It has been often remarked that Buridan reduced the number of internal senses to two: common sense and memory.[30] According to Buridan, it is necessary to posit

28 See H.A. Wolfson, 'The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts', cit., 98–99.

29 On Albert the Great's discussion of the internal senses, see especially N.H. Steneck, 'Albert the Great on the Classification and Localization of the Internal Senses', *Isis*, 65, 2 (1974), 193–211.

30 The issue of the internal senses in Buridan has been especially addressed by N.H. Steneck, *The Problem of the Internal Senses in the Fourteenth Century*, cit., 187–205; by S.W. de Boer, 'Buridan on the Internal Senses', in: *Documenti e studi sulla traduzione filosofica medievale*, XXV (2014), 403–421; by P. Sobol in John Buridan, *Quaestiones* De anima, II, *tertia lectura*, ed. by P. Sobol, in: *John Buridan on the Soul and Sensation. An Edition of Book II of his Commentary on Aristotle's Book on the Soul with an Introduction and a Translation*

a common sense in order (a) to explain perceptual self-awareness (the fact that we perceive our own acts of perception), (b) to explain how we can perceive and judge objects of perception in their absence, (c) to explain why we have dreams, and (d) to establish the agreement and disagreement between different perceptions and to form complex perceptual judgments such as 'this brown thing tastes sweet'. On the other hand, memory, the 'reservative' power, is necessary to store and preserve the information received and processed by the common sense. Buridan defends this twofold classification in the last redaction of his commentary on the *De anima*. However, as Sander de Boer has recently shown, Buridan's views of the number of the internal senses have changed throughout the different versions of his commentary on the *De anima*: the Lokert edition, the so-called '*secunda lectura*' (properly the '*non ultima lectura*') and, finally, the '*tertia sive ultima lectura*'.[31] Nicholas Steneck, in 1970, was the first to analyze Buridan's theory of the internal senses as it appears in the Lokert edition.[32] In 2014, de Boer has further developed that analysis by taking into account the '*non ultima lectura*' and the '*tertia sive ultima lectura*' as well. In the Lokert edition, Buridan does not advocate a clear cut position on the number of the internal senses: he compares a fourfold classification he generally ascribes to a set of authors (Avicenna, Averroes, Albert the Great, and 'many others') to a threefold division (to which he does not associate any particular name) which recognizes the common sense together with another cognitive power and a retentive power. As de Boer observes, some textual clues suggest that Buridan agrees with this threefold view, a guess which is confirmed by an analysis of the account of the internal senses Buridan gives in the '*non ultima lectura*', where he presents the same threefold position as 'Aristotelian', and explicitly agrees with it. The twofold classification (common sense and memory) usually ascribed to Buridan is only found in the third and final redaction of his *De anima* commentary. This classification, however, as de Boer argues, is already

of Question 18 on Sensible Species, unpublished Ph.D. thesis, Indiana University, Bloomington 1984, XCV–C and in P. Sobol, 'Sensations, Intentions, Memories and Dreams', in J.M.M.H. Thijssen and J. Zupko (eds), *The Metaphysics and Natural Philosophy of John Buridan*, Brill, Leiden 2001, 183–198; and by P. Kärkkäinen, 'Internal Senses', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 564–567. Some references to Buridan on the internal senses are also in S. Knuuttila and P. Kärkkäinen, 'Medieval Theories of Internal Senses', in: S. Knuuttila and J. Sihvola (eds), *Sourcebook for the History of the Philosophy of Mind. Philosophical Psychology from Plato to Kant*, Springer, Dordrecht 2014, 131–145 and in J. Biard, 'Le système des sens dans la philosophie naturelle du XIVe siècle (Jean de Jandun, Jean Buridan, Blaise de Parme)', *Micrologus*, 10 (2002), 335–361.

31 On the redactions of Buridan's *De anima*, see the 'Introduction' of this thesis, *supra* 13–14.

32 See N.H. Steneck, *The Problem of the Internal Senses in the Fourteenth Century*, cit., 187–205.

present *in nuce* in the '*non ultima lectura*', where Buridan concludes his treatment of the internal senses by saying that Aristotle often refers to the 'virtus cogitativa' as 'sensus communis', not distinguishing between the two.[33]

In all three versions of his commentary on the D*e anima*, Buridan also refers to the more strictly biological aspect of the issue of the internal senses, namely to their corporeal localization. Nevertheless, as far as his commentaries on the D*e anima* are concerned, Buridan devotes an entire question to the topic of the localization of the common sense only in the third redaction.

3.2.1.3. The Localization of the Common Sense in Buridan's Quaestiones de anima

The issue of the localization of the common sense in Buridan's texts has never been the object of systematic analysis. Scholars have included some considerations on this topic in studies focusing on a variety of different issues and topics. Therefore, the conclusions on Buridan and the localization of the common sense we find in those studies are mostly just cursory statements, not always getting the point of Buridan's text.[34] The present section of the thesis aims at offering the first systematic reading of the topic of Buridan on the localization of the common sense and at doing so within the framework of a study on the relationship between natural philosophy and medicine in Buridan's thought.

3.2.1.3.1. Beyond the Conciliatory Solution

In Buridan's works on natural philosophy, the issue of the localization of the common sense is explicitly addressed in two places: q. 24 of the second book of his commentary on Aristotle's D*e anima* in the *tertia sive ultima lectura*: *Utrum organum sensus communis*

33 See S.W. de Boer, 'Buridan on the Internal Senses', in: *Documenti e studi sulla traduzione filosofica medievale*, XXV, 2014, 403–421.

34 I will list here the references to these statements and come back to them in the conclusions of my analysis on Buridan and the hegemonic organ, see *infra*, footnote 123. See P. Sobol, 'Sensations, Intentions, Memories and Dreams', cit., 195 and the introduction to Buridan's text by P. Sobol in John Buridan, *Quaestiones* De anima, II, *tertia lectura*, ed. by P. Sobol, in: *John Buridan on the Soul and Sensation*, cit., XCV–C. See S.W. de Boer, 'Buridan on the Internal Senses', cit., 421. See S. Knuuttila, 'Aristotle's Theory of Perception and Medieval Aristotelianism', in: S. Knuuttila and P. Kärkkäinen (eds), *Theories of Perception in Medieval and Early Modern Philosophy*, Springer, Dordrecht 2008, 1–22, esp. 12. See P. Kärkkäinen, 'Internal Senses', cit., esp. 566. Note that also J. Biard refers to Buridan's view of the localization of the common sense in the heart in an article of 2002 on the senses in the fourteenth century, but here the reference is taken from a brief passage of q. 22, not from q. 24. See J. Biard, 'Le système des sens dans la philosophie naturelle du XIVe siècle', cit.

est in corde vel in cerebro seu in capite, nullus enim alibi ponitur illud organum,[35] and in q. 3 of his commentary on Aristotle's *De somno et vigilia* (from the *Parva naturalia*): *Utrum primum sensitivum sit in corde vel in cerebro, hoc est dicere, utrum organum sensus communis est in corde vel in cerebro*.[36] The same *quaestio* is also found in the Lokert edition of Buridan's commentary on the *Parva naturalia*: *Quaeritur utrum primum sensitivum, sive sensus communis, est in corde an in cerebro tanquam in organo* (i.e., q. 3 on the *De somno et vigilia*).[37]

Just as most medieval intellectuals (both philosophers and physicians), Buridan, in both the aforementioned works, presents and agrees with a conciliatory solution of the problem of the localization of the common sense. This solution was based on the idea that *both* the heart *and* the brain can, in a certain sense, be considered *the* organ of sensation because the heart can be seen as the primary organ, while the brain can be seen as an instrument, or a secondary cause of sensation. The process of sensation is perfected only in the heart, but the brain does its part in the process.[38] Buridan

35 I will follow the edition prepared by P. Sobol, see John Buridan, *Quaestiones* De anima, II, *tertia lectura*, ed. by P. Sobol, in: *John Buridan on the Soul and Sensation*. cit., (henceforth: QDA$_3$), with some corrections. The question on the localization of the common sense is in QDA$_3$, II, q. 24, 390–409. Buridan devotes no question to this topic in any of the two other known versions of his commentary *per modum quaestionis* on the *De anima*: the *non ultima lectura* and the Lokert edition (see John Buridan, *Quaestiones in libros* De anima, Paris 1516 and 1518). A work entitled *De organo sensus communis, quaestio Buridani: utrum primum sensitivum sit in corde vel in cerebro* (which appears in ms. Paris, Bibliothèque Nationale de France, Lat. 15888 at f. 69) is mentioned in E. Faral's catalogue of Buridan's works. See E. Faral, 'Jean Buridan. Notes sur les manuscrits, les éditions et le contenu de ses ouvrages', cit., 35. Z. Kuksewicz pointed out that this question does not constitute a separate work but, together with some other questions found at ff. 69–89^{v} of the same manuscript, it constitutes an *excerptum* of Buridan's main works (in this case, it is a *quaestio* from Buridan's commentary on the *De anima*). See Z. Kuksewicz, 'Remarque au catalogue des manuscrits des œuvres de Jean Buridan. Un recueil de questions dans le manuscrit Paris Bibl. Nat. 15888', *Mediaevalia Philosophica Polonorum*, *9* (1961), 31–39.

36 In my exposition, I am following the edition of Buridan's *Parva naturalia* prepared by M. Stanek on the basis of the manuscript version, see John Buridan, *Quaestiones in libros* Parva naturalia, ed. by M. Stanek, in: *Jana Burydana. Quaestiones super* Parva naturalia *Aristotelis*., cit. I will refer to this edition as '*PNms*'. I will correct the edition (or comment on it) when necessary.

37 See John Buridan, *Quaestiones in libros* Parva naturalia, Paris 1516 and 1518. The *De somno et vigilia* in the Lokert edition is henceforth QSV$_L$. The mentioned question is QSV$_L$, q. 3, ff. XLIIII^{ra}–XLV^{ra}. The question in the Lokert edition is closely parallel to the manuscript version but not exactly identical. I will mention some differences when relevant for my discussion. For the versions of Buridan's commentaries on the *Parva Naturalia*, see the introduction of this thesis, *supra* 18–20.

38 This solution was widely spread in the medieval texts, although presented in various, not precisely coinciding versions. Most probably, it was based on some of Avicenna's and Averroes' accounts. Avicenna and Averroes gave different accounts of the problem of localization of sensation and dealt in different ways with the problem of the not-coinciding positions of the Ancients on this

expresses this solution in the following terms: in a certain sense, it can be said that the organ of the common sense is in the brain because it is the place where all sensible species come together and pass through; but, in a proper sense, the heart remains the proper organ of the common sense, being the place where sensation is perfected and takes place *subiective* (i.e., as in its own substrate). Buridan claims the heart to be the proper substrate of sensation, the place which holds an *ontological* primacy in the process of sensation, while the brain is the organ where sensation arrives first from a

---

topic. In general, it is well know that Avicenna was most inclined at reconciling the Aristotelian theories with the medical views, while Averroes was much more oriented towards 'pure' Aristotelian positions. It is not the purpose of this thesis to further elaborate the differences between the two approaches, or the different nuances that seem to be present within the texts of each of the two authors themselves. For the aim of this section, nevertheless, it is worthwhile to show that, albeit in different ways, both Avicenna and Averroes, in some passages of their works, suggest the idea according to which the heart holds a primary role in sensation, the brain being a secondary cause or instrument. See for example Avicenna, *De anima*, ed. by S. van Riet, in: Avicenna Latinus. Liber de Anima seu Sextus de Naturalibus. *Édition critique de la traduction latine médiévale. Introduction sur la doctrine psychologique d'Avicenne par G. Verbeke, Partes* IV–V, E. Peeters-Brill, Louvain-Leiden 1968, V. 8, 176. For Averroes, see Averroes, *In De somno* I, in *In Aristotelis Opera omnia*, Venezia 1562–1574, vol. 6, f. 32^{v}–33^{r} and, in the *Colliget*, see the following passage: 'Et dicimus quod, quamvis virtus sensibilis princeps communis sensibilitatis sit in corde, ut dictum est, non tamen completur eius operatio manifeste nisi in cerebro, nucha et nervo'. Averroes, *Colliget*, Venezia 1574, III.31. For an analysis of Avicenna and Averroes' account of the localization of the common sense, see D. Jacquart, 'Coeur ou cerveau? Les hésitations médiévales sur l'origine de la sensation et le choix de Turisanus', cit., 76–84.

On this conciliatory solution, more in general, see especially A. de Libera, 'Le sens commun au XIIIè siècle. De Jean de La Rochelle à Albert le Grand', *Revue de Métaphysique et de Morale*, *96*, 4 (1991), 475–496 and O. Weijers, 'L'organe du sens commun chez les auteurs de la première moitié du XIIIe siècle', in: A. Bertolacci and A. Paravicini Bagliani (eds), *La Filosofia Medievale tra Antichità ed Età Moderna. Saggi in memoria di Francesco Del Punta (1941–2013)*, SISMEL Edizioni del Galluzzo, Firenze 2016, forthcoming. I am very grateful to prof. Weijers for sending me the proofs of her article before publication. On additional accounts of the history of the problem of the localization of the common sense, see *infra*, footnote 80.

For this solution in Latin medieval scholars, see Alexander of Hales, *Summa theologica*, IV, I, 2, q. 2, 1, 4, 1 and 2, Quaracchi 1928, 437–439; Anonymous, *Quaestiones super librum* De anima, II, q. 95, ed. P. Bernardini, SISMEL Edizioni del Galluzzo, Firenze 2009, 286–288; Peter of Spain, *Quaestiones super libro* De animalibus *Aristotelis*, book IV, q. 3, ed. F. Navarro Sánchez, Ashgate, Farnham 2015, 183; Albert the Great, *De homine*, ed. H. Anzulewicz and J.R. Söder, Aschendorff, Münster 2008 (*Opera omnia*, 27.2), 19, 35a; Galfridus de Aspale, *Quaestiones super librum* De somno et vigilia, q. I.15, ed. S. Ebbesen, *Cahiers de l'Institut du Moyen-Âge grec et latin* 83 (2014), 257–341, esp. 303–304; Peter John Olivi, *Quaestiones in secundum librum* Sententiarum, q. 62, ed. B. Jansen, Quaracchi 1924, 590; Simon of Faversham, *Quaestiones super librum* De somno et vigilia, q. 5, ed. S. Ebbesen, *Cahiers de l'Institut du Moyen-Âge grec et latin* 82 (2013), 115; and John of Jandun, *De somno et viglia*, q. 9, in *Quaestiones super* Parva naturalia, Venezia 1570, 67ra.

chronological point of view, but just to be sorted and then sent off to the proper organ of sensation, namely to the heart.[39]

The important point to stress is that Buridan, in his questions on Aristotle's D*e anima*, against this conciliatory background, goes further on a deeper theoretical level. Instead of simply repeating a brief and traditional outcome, he tries to develop a comprehensive theoretical explanatory model of internal sensation, based on a detailed anatomo-physiological description. More precisely, in his questions on Aristotle's D*e anima*, Buridan takes the occasion of the controversial issue on the localization of the common sense, and the traditional way of solving it by reconciling the authorities, to develop his own model, a model in which the importance of the role of the brain in the process of sensation is recognized and in which the contribution of the medical tradition to the understanding of phenomena related to sensation is made visible. This explanatory model of internal sensation as we can read it in the D*e anima*, is not presented as such in the *Parva naturalia*. It seems probable that Buridan, in his third and last redaction of the commentary on the D*e anima*, gave his most mature, sophisticated account of the main phenomena related to internal and external sensation, while the text in (both versions of) the D*e somno et vigilia* seems to be a previous account, shorter and less developed. Here below, I will therefore outline Buridan's account of the localization of the common sense as it is found in the commentary on the D*e anima*, showing this explanatory model.

3.2.1.3.1.1. Buridan's Explanation of Internal Sensation

At the very beginning of his q. II.24, Buridan states that the physicians, following the authority of Plato, Galen, Avicenna, 'and many others', support the thesis of the localization of the common sense in the brain (more specifically in the frontal part of the brain).[40] Buridan seems to know well the terms of the debate and the

39 See Buridan's words in the D*e anima*: 'Cum enim dicamus organum sensus communis in corde esse, dicimus hoc esse verum quia in corde subiective fit sensatio. Cum autem dicunt alii organum sensus communis esse in cerebro, non dicunt proprie loquendo verum, sed ad istum sensum dicunt verum, quia in cerebro est organum ad quod omnes species sensibilium per sensus exteriores congregantur et pertranseunt, antequam gerantur (generantur *ed.*) ad cor, in quo fit subiective sensatio'. See QDA$_3$, II, q. 24, 401–402. See Buridan's words in the *Parva naturalia* (Stanek's edition): 'Et ita dicendum (dividendum *ed.*) est quod duplex est organum sensus communis: unum quod potest vocari organum primae congregationis sensuum exteriorum et specierum ab eis receptarum. Et illud organum est in capite, de quo intendunt medici. Aliud est organum in quo perficitur sensatio et iudicium de omnibus sensibus. Et ita dicendum (dividendum *ed.*) quod illud organum est cor vel in corde'. PN*ms*, D*e somno et vigilia*, q. 3, ll. 145–150, 183.

40 'Arguunt medici quod sit in cerebro et non in corde, auctoritate Galeni et Avicenne, Platonis et

arguments usually brought forward by the medical tradition, as for example the argument of the lesions: physicians, Buridan explains, affirm that lesions of the frontal part of the brain impair common sense, as observations of patients with mental illness confirm. Another argument derived from medical observation and practice is listed: physicians administer medicines acting on the brain to induce sleep or awareness; but sleep (according to Aristotle) is a *passio* of the common sense; therefore, the common sense has to be localized in the brain.[41] Buridan also presents another medical remark, this time more theoretical than practical, i. e. the argument about the excessive heat of the heart: a sense – the common sense – that is perceptive of the primary qualities must possess them moderately, in a right proportion, stripped of their extremes; the heart however does not possess primary qualities in a moderate manner: it is in fact very warm.[42] Therefore, the common sense cannot be localized in the heart.

The opposite view, Buridan argues, is based on the authority of Aristotle, Averroes and Avicenna. He clearly indicates the works he has in mind: *De somno et vigilia*, *De partibus animalium*, Averroes' *Colliget*, and Avicenna's *Canon*.[43] Buridan explicitly

---

plurimorum aliorum, qui dicunt quod est in cerebro in eius anteriori concavitate'. See QDA$_3$, II, q. 24, 390.

41 'Et dicunt significationem esse sufficiens, quia lesa posteriori parte cerebri leditur memoria, et lesa media leditur ymaginatio, et lesa anteriori leditur sensus communis et tota pars sensitiva, sicud dicitur contingere in freneticis. Aristoteles ponit sompnum esse passionem primi sensitivi, per quod intendit sensum communem. Sed sompnus est passio cerebri; quod patet, quia ad provocandum sompnum vel vigiliam ponunt omnes medici localia remedia circa cerebrum, et ita etiam ad remedicandum sensum'. See QDA$_3$, II, q. 24, 390.

42 'Item specialiter sensus communis, perceptivus primarum qualitatum, debet esse in media proportione earum et esse denudatus ab excellentis, ut habetur in secundo *huius*. Cor autem non est sic in media proportione, sed est multum calidum ultra huiusmodi proportionem, prout communiter conceditur'. See QDA$_3$, II, q. 24, 391. With the wording 'primary qualities' Buridan is here referring to the qualities of hot, cold, wet, and dry, namely to the list of qualities established by Aristotle in the *De generatione et corruptione* (see Arist., *De gen. et corr.*, II.2, 329b7–330a29). On the Scholastic conception of primary qualities, see R. Pasnau, 'Scholastic Qualities, Primary and Secondary', in: L. Nolan (ed), *Primary and Secondary Qualities. The Historical and Ongoing Research*, Oxford University Press, Oxford 2011, 41–61.

The other arguments in favor of the *opinio medicorum* concern several points: the relationship between fantasy and the common sense; the analogy that has to be maintained between common sense and the other internal senses (*virtutes ymaginativa, cogitativa, memorativa*); the correspondence between the brain and *virtus sensitiva*; the incompatible theses of the inactivity of the common sense and the intensification of the heat in the heart while sleeping. See QDA$_3$, II, q. 24, 390–393.

43 'Oppositum determinat Aristoteles in *De sompno et vigilia* expresse, et in tertio *De partibus animalium*.

states his agreement with the thesis of the localization of the common sense in the heart: 'Et dico cum Aristotele quod illud organum est cor …'.[44] First, Buridan proves this position by an appeal to the 'common way of speaking' (*per communem vocem omnium*[45]), i. e., by listing some common sayings or common experiences related to the role of the heart, and also by mentioning a few examples from Sacred Scripture.[46] The remaining arguments are *experientiae* and *rationes* taken from the Aristotelian texts and other authorities.[47] As 'experiences', Buridan proposes the following two: (1) the heart, and not the brain, is the place where physical pain and sensory representations of something that strikes us arrive and are felt;[48] (2) in the formation of the embryo the first part to be formed is the heart, which has its own life and sense before the other members are formed; in fact, the heart nourishes itself and grows. Moreover, if it is pricked, it moves. This shows that the heart does not derive its capacity for sensing from any other corporeal part.[49] Buridan then lists some arguments to show that the heart is the principle of heat and sensitive spirits required for sensing; the brain

---

Et Averroiis (!) hoc nititur declarare in suo libro *Colliget*. Et Avicenna in primo *Canonis* etiam consentit Aristotele'. See QDA$_3$, II, q. 24, 393.

44 See QDA$_3$, II, q. 24, 393. The same explicit claim is also in the Lokert edition of the *De somno et vigilia*: 'Dico breviter cum Aristotele quod sensus communis est in corde tanquam in eius organo primo et primitivo'. See QSV$_L$, f. XLIIII^{rb} and in q. 3 in the manuscript version, according to Stanek's edition: 'Breviter dicendum (dividendum *ed.*) est cum Aristotele quod sensus communis est in corde tamquam in suo principali organo, ita quod in corde exercetur sensatio et iudicium, quae (qua *ed.*) vel quod vocamus sensationem vel iudicium sensus communis'. See PN*ms*, *De somno et vigilia*, q. 3, ll. 57–60, 179.

45 See QDA$_3$, II, q. 24, 393.

46 'Omnes enim communiter dicunt se habere cordi negotia ad que sunt bene intenti, et scire corde tenus ea que sciunt dicere et proferre sine libro. Et de sacra scriptura habemus diligere dominum Deum non dixit 'ex toto cerebro'. 'Et confitebor tibi, domine in toto corde meo'. Et amasius dicit cor suum esse apud amasiam, et sic de aliis'. See QDA$_3$, II, q. 24, 393–394.

47 'Hee autem experientie et rationes collecte sunt ex Aristotele et aliis auctoritatibus …'. See QDA$_3$, II, q. 24, 398.

48 'Item adhuc videtur experientia notabilis, quia si quis ante leditur, et pungitur sive in pede sive in manu, ut forte propter dolorem praeiacentem ratione apostematis vel alias, videtur sibi quod sentiat dolorem usque ad cor, non ad cerebrum. Et clamant vulgares se punctos esse ad cor, et fit inde commotio cordis et non cerebri. Et si actus sensitivum non perveniret et terminaretur ad cor, nulla esset ratio quare, ex representativo (representivo *ed.*) sensu et terribile (!), cor ita violenter afficeretur timore et commovetur, et non cerebrum. Et ymo omnes passiones sensus seu appetitus sensitivi manifeste fiunt circa cor vel proveniunt a corde tamquam ab ipso principaliter sentiente'. See QDA$_3$, II, q. 24, 394–395.

49 Item alia experientia est quod in formatione embrionis prima pars apparens nobis formata est cor, quod iam ante apparentem formationem aliorum membrorum habet vitam et sensum, nutritur enim et augetur. Et si pungatur, commovetur; non ergo (quo *ed.*) appropriata alio membro (ms C

on the other hand is cold and without spirits; therefore it cannot be the principle of sensing.[50] Two other *rationes* are respectively centered on Aristotelian claims for the need of a first principle governing the body, and for the heart's nobility. The heart is the principle of all operations proper to the body. From the nobility of sensation over nutrition, and that of the heart over the other organs, it can be inferred that the heart has to be the location of the common sense.[51] Another Aristotelian argument explains that, since both sense and appetite cause an act of movement, the principle of sensing and the principle of moving have to be located in the same organ; but the principle of moving resides in the heart; therefore the common sense has to be located in the same place.[52] The list of arguments ends with a general Aristotelian

---

seems to have a better reading for the last sentence: 'non igitur determinatur sibi sensus ab alio membro)'. See QDA3, II, q. 24, 395.

The topic of the first member to be formed in the embryo constituted another aspect of the controversial problem of the hegemonic organ. Buridan always endorses the Aristotelian answer according to which the heart is the first member to be formed.

The remark about the pricked embryo is present in other medieval texts before Buridan's. See, for example, Albert the Great, D*e anima*, ed. C. Stroick, Aschendorff, Münster 1968, III, 5, 4; Roger Bacon, *Liber primus communium naturalium*, I, 4, 3, 1 in *Opera hactenus inedita Rogeri Baconi*, ed. R. Steele, Oxford 1911, 283, 17–22; Simon of Faversham, *Quaestiones super librum* De somno et vigilia, ed by. S. Ebbesen, in: 'Simon of Faversham, Quaestiones super librum D*e somno et vigilia*. An Edition', *Cahiers de l'Institut du Moyen-Âge grec et latin*, 82 (2013), 90–145, q. 5, 114–115; Giles of Rome, *Quodlibet* I, q. 14 in *Quodlibeta*, Leuven 1646, 29; Matthew of Aquasparta, *Quaestiones diputatae* De anima, ed. by A.J. Gondras, Vrin, Paris 1961, q. 15, 77. According to some of the aforementioned texts, the image of the pricked embryo is taken from Aristotle. Neverthless, in Aristotle's texts there is not the image of the pricked embryo, but just the idea that the heart moves in the embryo before any other corporeal part (See Arist., *De part. an.*, III.4, 666a16–22: 'Again, as neither the blood itself, nor yet any part which is bloodless, is endowed with sensation, it is plain that that part which first has blood, and which holds it as it were in a receptacle, must be the primary source. And that this part is the heart is not only a rational inference, but is also evident to the senses. For no sooner is the embryo formed, than its heart is seen in motion as thought it were a living creature, and this before any of the other parts, it being, as thus shown, the starting-point of their nature in all animals that have blood' in Aristotle, *The Complete Works of Aristotle*, ed. J. Barnes, 2 vols., Princeton University Press, Princeton, 1984, vol. I, 1038.) For the image of the pricked embryo, Albert the Great could have been the source of many of the aforementioned authors, Buridan included. On the topic of the pricked embryo, see W. Pagel, 'Harvey, Foetal Irritability – and Albertus Magnus', *Medical History*, 10, 4 (1966), 409–411. I am currently preparing an article on the image of the pricked embryo in the Middle Ages.

50 See QDA3, II, q. 24, 395–396.

51 See QDA3, II, q. 24, 396–397.

52 See QDA3, II, q. 24, 397. Buridan presents this point in the sixth chapter of his *Expositio* on the D*e motibus animalium*. See F. Scott and H. Shapiro, 'Jean Buridan's D*e motibus animalium*', *Isis*, 58 (1967), 533–552, esp. 548–551. The coincidence of the principle of movement and the principle of sensing in

claim concerning the centrality of the heart: the heart being the origin of nerves and veins, as Aristotle states, it has to be the principle of body, life, sensation, and movement.[53]

So far, Buridan has expressed his agreement with the Aristotelian position (the thesis of the localization of the common sense in the heart) and listed several arguments in its favour. Nevertheless, he decides to introduce a long digression that takes into account the position of medical authorities and shows the importance of the role of the brain in the sensation mechanism. He starts by claiming that the outcomes reached by so many and so influential masters about the brain should not be rejected and that, consequently, he can make the following claim: the brain cooperates (*concurrit*), either actively or passively, in the formation of sensation in the common sense, i. e., it 'assists' the heart in the processes of sensation.[54]

On the one hand, this cooperation is needed to explain (1) some phenomena related to mental illness (the lesions of the frontal part of the brain makes human beings *frenetici* and *amentes*),[55] (2) the lack of sensation while fainting and sleeping,[56] and (3) how the

---

the heart is an Aristotelian claim, see, for example, Arist., *De part an.*, III.3, 665a10–15 and Arist., *De som. et vig.*, 2, 456a1–6.

53 See QDA$_3$, II, q. 24, 397. The identification of either the heart or the brain as the origin of nerves and veins constituted another topic of controversy between philosophers and physicians. For an account of Buridan's opinion on the origin of veins, see the following section. See *infra*, 89–96.

54 'Et hoc credo esse tenendum, sed tamen nec propter hoc ego credo omnino esse repellendum hoc quod multi alii et tanti doctores dixerunt de capite sive de cerebro. Propter quod ego volo ponere istam conclusionem quod de necessitate cerebrum concurrit aut active aut passive ad hoc quod fiat sensatio in sensu communi'. See QDA$_3$, II, q. 24, 398.

55 'Et quod (hoc *ed.*) passive probatur primo per hoc signum quod, lesa anteriori parte cerebri, inpeditur sensatio per sensum communem et per omnem sensum, et ex frigiditate (infirmitate ? CB) illius partis cerebri fiunt homines frenetici et amentes'. See QDA$_3$, II, q. 24, 398–399.

56 'Item in hoc est signum quod quibus in collo apprehenduntur vene, insensibiles faciunt, ut dicit Aristoteles in libro *De somno et vigilia*. Et non apparet quare pedes et partes inferiores non possunt tunc sentire nisi quia per huiusmodi apprehensionem inpeditur via de cerebro ad cor per quam viam necesse est omnes species sensibiles, mediante cerebro, multiplicari ad cor, ut aliqui dicunt, et per quam necesse est omnes spiritus sensitivos muliplicari per cerebrum ad sensus exteriores, ut alii dicunt'. See QDA$_3$, II, q. 24, 399. 'Item in sompno fiunt omnes sensus exteriores inpotentes sentire. Sed quare fierent pedes inpotentes sentire in sompno nisi cerebrum requireretur active aut passive ad sentiendum? ...'. See QDA$_3$, II, q. 24, 399. 'Item si esset via specierum sensibilium de pedibus ad cor non mediante cerebro, et anima in corde per huiusmodi species (sensus *ed.*) innata esset formare sensationem, sequitur utique quod ascensus vaporis ex nutritione (nutritio *ed.*) ad capud, et reversio eorum, non inpediret sensationem per pedes et per partes inferiores in sompno, que tamen omnia sunt expresse contra determinationem Aristotelis in *De somno et vigilia*'. See QDA$_3$, II, q. 24, 400–401.

memory functions.[57] On the other hand, the cooperation of the brain is also required to preserve the sensitive and vital functions of the heart, and to guarantee its efficiency. In fact, the brain is able to dampen the impetuous passions that would otherwise arrive directly from the external senses to the heart and, therefore, it can protect the heart from excessive excitement.[58] Furthermore, during sleep, and because of the condensation of nutritional vapors, the closure of the way that carries the sensitive spirits from the heart to the external sense organs occurs in the brain: thanks to this, the heart can regenerate itself because spirits and heat come back to it.[59]

After having concluded and proved that the brain cooperates, either actively or passively,[60] in the formation of sensation in the common sense, Buridan also wants to explain how this cooperation of brain and heart occurs in terms, so to speak, of anatomo-physiology.

---

57 See *infra*, 72–73.

58 'Prima (*sc.* causa CB) est quia cor, in sentiendo excessiva sensibilia et passionativa, compatitur naturaliter et comovetur et aliquando bene gravatur (generatur *ed.*), ut in timore, ira, et tristitia. Idcirco ne nimis excellenter generatur (gravetur ? CB), natura ordinavit quod species a sensibus exterioribus non directe multiplicarentur ad cor sed mediante cerebro, ut per hoc aliqualiter prohibetur impetus passionis'. See QDA$_3$, II, q. 24, 404.

59 'Secunda causa assignari potest quia, cum in vigilia continue cor multiplicat et extendit spiritus sensibiles ad singulos sensus exteriores, per excessivam vigiliam ita depauperatur (depauporetur *ed.*) ab huiusmodi spiritibus quod ipsum moretur (? CB) nisi requiescet, non ab opere vegetativo (vegetative *ed.*) sed ab emissione spirituum sensibilium ad exteriora (ad exteriori *ed.*). Idcirco natura ordinavit quod esset via communis in huiusmodi expansione spirituum que innata esset claudi simul ut ad nullos sensus exteriores miterentur spiritus sensitivi. Et locus clausionis aptus est in cerebro, per fumos et vapores ex nutrimento ascendentes ad caput et, ex frigiditate cerebri, ingrossatos et repercussos ad partes interiores. Tunc enim revertuntur ad cor calor et spiritus sensibiles et regenerantur (regeneratur *ed.*) plurimum quos, post expergefactionem, cor iterum potest per longum tempus mitere ad omnia organa sensitiva. Et hoc apparet esse determinatio Aristotelis in libro *De somno et vigilia*'. See QDA$_3$, II, q. 24, 404–405.

60 Note that Buridan, at the beginning of his analysis on the role of the brain, uses the phrase 'active aut passive' to refer to the possible type of cooperation the brain offers to the formation of sensation in the common sense (see *supra* footnote 54). In the case of the first proof it seems that he is proving that the brain offers a passive cooperation (he says: 'Et quod (hoc *ed.*) passive probatur primo …' see *supra*, footnote 55). Nevertheless, in a further proof, he goes back to the general phrase 'active aut passive' (see *supra*, footnote 56). Moreover, in the remaining proofs and in the remaining part of the question, he does not refer anymore to a qualification of the cooperation of the brain in terms of 'activity' or 'passivity'. Therefore, it seems to me that Buridan is not interested in specifying here whether the brain concurs actively or passively to the formation of sensation. He just wants to claim that the brain plays a role of cooperation in the processes related to sensation and to describe the process of sensation on the basis of this cooperation between heart and brain. And this is exactly what he developed in the section of q. 24 we just analyzed.

A 'passage' (*via*), which Buridan once calls the 'sensitive nerve' (*nervus sensitivus*), connects the heart with *the frontal part* of the brain and, in its extreme part (i.e., the extreme part of the sensitive nerve) which is the closest to the brain, is divided into several little nerves (*nerviculi*) connected with the organ of the external senses.[61] This nerve performs a double function: (1) it carries the *species* of sensible objects (*species sensibilium exteriorum*), perceived by the organs of the external senses, to the heart;[62] (2) it is the way through which the heart sends the sensitive spirits to the organs of the external senses while a man is awake. It is actually that passage that, during sleep, is obstructed by the condensation of the nutritional vapors. This obstruction, as we know earlier,[63] allows the heart to regenerate itself. But this blockage is also the reason why, during sleep, we are not able to perceive: on the one hand, the sensible *species* cannot reach the heart, and, on the other, the heart cannot send the sensitive spirits to the organs of the external senses.[64]

There is also a second 'passage' (that Buridan never calls 'nerve', but just a 'way', *via*) connecting *the dorsal part* of the brain to the heart. In particular, it joins the heart to the '*organum reservativum*': the place where the sensitive *species/intentiones* received by the heart are stored. Therefore, the functions of this 'passage' are also twofold: (1) to transport the *species* from the heart to that 'reservative' organ, allowing the conservation of the *species* themselves; (2) to bring back these *species* to the heart so as to enable the heart to activate the process of memory, by recognizing those things of which the *species* are representations.[65] In the end, the role of this

61 'Ibi enim a corde protenditur nervus sensitivus usque ad carnem (Sobol's apparatus has the following more convincing variants for 'carnem': 'organum' and 'extremum' CB) capitis, et ibi dividitur in plures nerviculos procedentes ad singula organa sensuum exteriorum'. See QDA$_3$, II, q. 24, 408.

62 '… sed de illo loco cerebri (*sc.* the frontal part CB) est iterum via ad cor per quam ille species (*sc.* the *species sensibilium exteriorum* CB) iterum multiplicantur ad cor …'. See QDA$_3$, II, q. 24, 401.

63 See *supra*, 71.

64 See *supra*, footnote 59. See also the following passages: '… in sompno non potest esse sensatio per organa sensuum exteriorum quia per infrigidationem cerebri impedita est via, vel etiam per vapores grossos et indigestos ascendentes de corde et epate ad cerebrum et revertentes a capite ad cor, sicut habetur in libro D*e somno et vigilia*. Et ob hoc etiam, ad provocandum sompnum vel vigiliam, ponuntur localia remedia ad caput, ut per eius ligamentum vel solutionem possint vel non possint sensus exteriores ministrare cordi species sensibiles'. See QDA$_3$, II, q. 24, 402–403; '(During sleep, the heart CB) fit inpotens mitere spiritus sensibiles ad organa (organo *ed.*) sensuum exteriorum propter clausionem vie, et etiam fit inpotens recipere species seu intentiones sensibilium a sensibus exterioribus. Ymo etiam fit impotens sentire, nisi hoc forte fiat per species in fantasia reservatas sompniando. Et ita etiam fiunt omnes sensus exteriores impotentes sentire propter carentiam spirituum sensibilium non potentium venire a corde'. See QDA$_3$, II, q. 24, 407.

65 'Et ita etiam aliud organum est quod est reservativum, quod nominamus 'organum phantasie' vel

second 'passage' is twofold: it allows human beings to form phantasms when (a) they are not anymore in the presence of the objects that they have previously perceived (by the act of 'bringing back to memory'), or (b) they have their external senses temporarily unused (like during sleep, when the act of sensing occurs in the case of dreams). Buridan explicitly describes this second point: during sleep, the first 'passage' (i. e. the passage from the frontal part of the brain to the heart) is always closed, whereas the second 'passage' (i. e. the one from the dorsal part of the brain) can sometimes be opened. When both passages are blocked, sleep without dreaming occurs; but, when the second passage remains open, we experience dreams.[66]

By means of this detailed description, Buridan provides his own view of the processes of sensation. This view, while maintaining the Aristotelian primacy of the heart, stresses the importance of the role of the brain and of the suggestions coming from the medical tradition.

'memorie', et est inter duas cellulas posteriores cerebri, ad quem locum etiam protenditur via de corde ad cerebrum'. See QDA$_3$, II, q. 24, 408. 'Tertium organum est in posteriori parte capitis. Et est via de corde ad illud organum aliter quam ad predictum organum, quod erat in priori parte capitis, per quam viam multiplicantur a corde omnes species seu intentiones sensationum factarum (factorum *ed.*) in corde. Et ibi reservantur, cessante sensatione in corde. Et iterum ille intentiones ibi reservate sunt innate multiplicari ad cor, ut cor apprehendat per eas ea quorum ista sunt representationes. Et ita fiunt nobis operationes nobis nihil sentientibus per sensus exteriores'. See QDA$_3$, II, q. 24, 405–406.

Note that Buridan is using here the expression 'species seu intentiones'. He is not distinguishing here between 'species' and 'intentiones', a distinction he instead stressed in q. 22: 'Intentiones vocamus saepe 'species sensibiles' quia repraesentant sensibilia exteriora. Tunc, ad ponendum differentias inter eas et species sensibilium quae in sensibus exterioribus recipiuntur, multi philosophorum antiquorum vocaverunt eas 'intentiones'. Est enim inter has et istas magna ⟨et CB⟩ notabilis differentia. Species enim coloris aut lucis requirit dyafaneitatem in subiecto in quo recipitur, quam non requirit intentio multiplicata ad sensum communem. Et ita species soni et species odoris requirunt ceteras et diversas dispositiones in illis in quibus recipiuntur, quas non requirunt istae intentiones. Sed iterum istae species non sunt repraesentativae nisi sensibilium exteriorum. Istae autem intentiones repraesentant non solum ista sensibilia, ymo et ipsas sensationes eorum. Et fiunt istae species in subiectis suis sine cognitione praevia; istae autem intentiones fiunt ab ipsis sensationibus sicud species ab obiectis exterioribus, et ob hoc est quod repraesentant illas sensationes'. See QDA$_3$, II, q. 22, 371–372.

66 'Et notandum est quod aliquando utraque via est clausa, scilicet cordis tam ad organum anterioris capitis quam ad organum posterioris. Et tunc fit nobis sompnus sine sompnio. Aliquando clausa est via ab organum anteriori, manente alia via aliqualiter aperta que est ad organum posterioris, et tunc fiunt sompnia cum nondum valeat fieri sensatio per sensus exteriores'. See QDA$_3$, II, q. 24, 405–406.

Given the prominence of this explanatory model of sensation – and of the anatomo-physiological system on which it is based –, it is worthwhile to take a closer look, on the one hand, at its historical background and, on the other, at its possible influence on later authors.

3.2.1.3.2. The Background of Buridan's Anatomical Description

It can be asked, in fact, where Buridan learned this anatomo-physiological description of passages connecting heart and brain. Or, more accurately, how did he arrive to develop it? Peter Sobol, the only scholar who has explicitly raised this question, when reflecting on this point, left the question open and answered very briefly: he referred to the two passages connecting the heart to the brain as 'phantom nerves' that Buridan could have introduced after a superficial reading of a medical text or a vague knowledge of the anatomy of the nervous system acquired through a presumed familiarity with the medical faculty.[67]

In the following paragraphs, I shall try to answer this question in some more detail, and develop Sobol's hypothesis, by taking into account some sources preceding and contemporary to Buridan. The results of my analysis run as follows. Unsurprisingly, Buridan's idea of introducing a description of heart-brain physical connections in terms of passages/veins/nerves within the issue of the localization of the common sense is neither isolated nor unique, but takes its inspiration from a background. Some philosophical treatments of the issue of the localization of the common sense, in fact, included physical descriptions of heart-brain connections. At the same time, Buridan's own description does not precisely overlap with any of these other descriptions. A clear and well-defined two-passage system, with one nerve connecting the forebrain to the heart and another passage linking the heart to the dorsal part of the brain (where the memory is localized) is only in Buridan's text. More precisely, Buridan si aware of the background and he incorporates the idea of explaining the collaboration between the heart and the brain by means of an anatomical description of passages between the two organs. At the same time, the very way he answers to the question on the localization of the common sense, the explanatory model of internal sensation he proposes in the *De anima*, and the anatomo-physiological description on which it is based are an original solution by Buridan.

I shall provide the details of my analysis here below.

---

67 See P. Sobol, *Sensations, Intentions, Memories and Dreams*, cit., esp. 195 and 198.

Among the authors that proposed in their texts a traditional conciliatory solution about the issue of the localization of the common sense, some presented a very simple and brief answer, not addressing the problem of *how* the brain and the heart interact while being both, but in different senses, the crucial locations of sensation. Sometimes, though, they refer to the fact that there must be an exchange or passage of some entities between the heart and brain.[68] Others, on the contrary, enrich and develop the traditional solution. These authors clearly mention passages connecting the brain to the heart and warranting the exchange of sensations, spirits, and heat.

Descriptions of nervous passages between the brain and the heart are found, for example, in Robert Kilwardby's question q. 4 of his *De spiritu fantastico*.[69] The traditional solution according to which both the heart and the brain can be considered the location of the common sense is framed there into some broader anatomo-physiological considerations on connections between the two organs. Kilwardby's account of the issue of the localization of the common sense is impressively long and detailed (though, not very systematic). In the final section of his question, after having presented the traditional solution to the issue of the localization of the common sense,[70] Kilwardby shows how the medical idea according to which the instruments of the external senses converge in the brain, where the cell of the common sense is located, is compatible with the cardiocentric position. He describes very precisely the nervous connections between the anterior part of the brain (where the nerves of the organs of the external senses convey) and the heart. For example, he describes how taste sensation is processed: 'De gustu vero sic dici potest, scilicet quod ab illo anteriori cerebri procedant nervi usque ad inferius iuxta cor, ubi fiat operacio sensus gustus'.[71]

---

68 See, for example, the already mentioned Anonymous, *Quaestiones super librum* De anima, II, q. 95, ed. P. Bernardini, cit., 286–288. See also Galfridus de Aspale, *Quaestiones super librum* De somno et vigilia, cit., 303–304.

69 Robert Kilwardby, *De spiritu fantastico*, ed. by P.O. Lewry, in: *Robert Kilwardby, O.P., On Time and Imagination*: De tempore, De spiritu fantastico, Oxford University Press, Oxford 1987, 108–130. For a general presentation of Kilwardby's theory of sense perception, see J.F. Silva, 'Robert Kilwardby on Sense Perception', in: S. Knuuttila and P. Kärkkäinen (eds), *Theories of Perception in Medieval and Early Modern Philosophy*, Springer, Dordrecht 2008, 87–99.

70 'Cor enim est principium primum et remotum propriorum sensuum, cerebrum vero principium secundum et propinquum: ita quod cor est principium prime influentie ad eos, cerebro secunde. Utrumque, iterum, potest dici organum sensus communis. Cerebrum enim est instrumentum primo recipiens sensibilia et de eisdem iudicans, et cor secundo: et ita, motus sensuum propriorum a corde incipiunt sicut a primo influente spiritum, calorem et vitam, et ad ipsum redeunt sicut ad comprehensiuum et iudicatiuum ultimam'. See Robert Kilwardby, *De spiritu fantastico*, cit., 117.

71 See *Ibidem*, 123.

Nerves connect the frontal part of the brain to the heart, where the 'operation of taste' takes place. Speaking about the link between brain and heart, he mentions various possible types of connections extending to the heart: '... extenditur via vel viae usque ad cor, sive per venas retis cerebri, sive per nervos sensitivos et motivos, sive potius utroque modo'.[72] He mentions the motion of spirits and species from the brain to the heart: through a middle way ('via media') '... descendit spiritus ad cor vel ad ipsum respicit, transit species rei sensibilis non solum a sensu particulari, immo eciam inde ad cor'.[73]

A fourteenth-century medical text, i. e., the *Summa medicinalis* by the Italian physician Tommaso del Garbo (d. ca. 1370) confirms that it was common among philosophers to propose the harmonizing solution of the issue of the localization of the common sense together with a description of anatomical connections between heart and brain.[74] Tommaso describes (and criticizes) philosophers' cardiocentric position and points out that they speaks about different kinds of ways ('viae') connecting the brain to the heart. On the one hand, Tommaso reports, they mention ways through which the excessive cardiac heat is transported from the heart to the brain in order to make that heat tempered by the action of the brain. These ways, according to philosophers, take their origin from the heart. On the other hand, they refer to ways that take their origin from the brain and transport the tempered heat from the brain to the heart. This second kind of ways, Tommaso explains, are nervous ways called '*poroi*' by Aristotle, who did not recognize nerves. Tommaso conjectures that the philosophers' anatomical construction is based on a passage

72 See *Ibidem*, 127.

73 See *Ibidem*, 121.

74 For Tommaso's text, see Tommaso del Garbo, *Summa medicinalis*, Venezia 1531. Q. 28 is at ff. 86va–88va. For an account of Tommaso del Garbo's view of the localization of the common sense, see Boughan's thesis, K.M. Boughan, *Beyond Diet, Drugs, and Surgery: Italian Scholastic Medical Theorists on the Animal Soul, 1270–1400*, unpublished Ph.D. thesis, The University of Iowa 2006, 132–168. On Tommaso del Garbo more in general, see K. Park, *Doctors and Medicine in Early Renaissance Florence*, Princeton University Press, Princeton 1985, 202–211 and, especially for the author's biography, I. Cappellini, 'Date importanti per la biografia di Maestro Tommaso del Garbo e per gli inizi dell'insegnamento medico nello Studio Fiorentino desunte dai codici del Fondo Vaticano latino', *Rivista di storia delle scienze mediche e naturali*, 41 (1950), 212–218, F. Guido, 'Cenni biografici su Dino e Tommaso del Garbo', in: *Atti del XXI Congresso Internazionale di Storia della Medicina, Siena (Italia), 22–28 settembre 1968*, Arti grafiche Cossidente, Roma 1970, 156–163; A. de Ferrari, 'Tommaso del Garbo', *Dizionario biografico degli Italiani*, 36, (1988) 581–585. For recent research on Tommaso del Garbo, see J. Chandelier, *Avicenne et la médecine en Italie. Le* Canon *dans les universités (1200–1350)*, forthcoming, esp. 192–198, but Tommaso del Garbo's theories are analyzed all along the book. I thank the author for sending me the text.

from Aristotle's *De generatione animalium*.[75] He seems to refer to the following passage: 'Nam iam diximus in sermonibus de sensu quod viae omnium instrumentorum sensus extenduntur ad cor vel ad membrum conveniens cordi'.[76] So, according to Tommaso, philosophers could have taken their inspiration from this passage for their description of connections between heart and brain. In the case of Kilwardby and Buridan, this is unlikely since they do not refer to Aristotle when presenting their anatomo-physiological description of ways connecting the heart to the brain, and this Aristotelian passage is too poor to justify elaborated descriptions such as Buridan's one. Moreover, this passage speaks just about 'ways' of the sense organs reaching the heart, not specifically referring to connections between the brain and the heart and exchanges of heat, spirits or species between the two organs.

In addition, Tommaso describes another set of nervous connections which, according to philosophers, explain the process of sensitive cognition: some nerves convey alterations originating from sensible objects (*alterationes omnes que fiunt a sensibilibus*) to the brain; from the brain, other nerves transport those alterations to the heart, which is the organ that properly judges what comes from the organs of the external senses.[77]

The texts by Kilwardby and Tommaso testify that it was not uncommon to find descriptions of physical connections between the heart and the brain in philosophical accounts of the issue of the localization of the common sense previously and contemporarily to Buridan. Buridan was certainly aware of this background and got

75 'Solvunt per illud quod ponit Philosophus quinto *De generatione animalium*, quia apparet a corde ad cerebrum procedere quasdam vias ut per illas fit inter illa communitas in sentiendo; modo impossibile est quod per illas vias per quas vadit calor et spiritus a corde, ut sunt arterie, per illa⟨s CB⟩ habeat cerebrum cum corde communionem in sentiendo, quia calor in illis viis contentus est sub forti et intensa caliditate. Ideo oportet quod per alias vias procedat spiritus et calor contemperatus a cerebro ad cor, qui est conveniens instrumentum sensus et motus. Tales autem vie sunt nervi procedentes a cerebro ad cor, quas vias Aristoteles vocet 'poros'. Nam Aristoteles nervorum substantiam non cognovit, ut dicit Averroys secundo *De anima*'. See Tommaso del Garbo, *Summa medicinalis*, Venezia 1531, q. 28, f. 87va.

76 Arist., *De gen. an.*, v.2, 781a17–19 in Aristotle, *De generatione animalium (antiqua translatio)* ed. A.M.I. Van Oppenraaij, in: *Aristotle*, De Animalibus, *Michael Scot's Arabic-Latin Translation, Part Three, Books XV–XIX: Generation of Animals*, Brill, Leiden 1992, 221.

77 'Est ergo in his ille processus quod alterationes omnes que fiunt a sensibilibus secundum organa particularia sensuum terminantur omnes per nervos ad cerebrum tamquam ad organum communem sensum, ex organo autem communi per nervos ille alterationes facte in calido et spiritu terminantur omnes ad cor tamquam ad primo iudicans de omnibus sensibilibus, eo quod in corde solum species sensibilis unitur anime sensitive …' See Tommaso del Garbo, *Summa medicinalis*, Venezia 1531, q. 28, f. 87va.

inspiration from it. This is confirmed by two passages in his q. 3 of the *De somno et vigilia* (in both the Lokert edition and the manuscript version). In these passages Buridan explicitly, albeit vaguely, refers (and agrees with) previous account in which the solution of the controversial topic comes together with a description of physical connections between the heart and the brain. In the manuscript version, Buridan reports the description as an 'alia solutio' he considers 'veriorem'. In the Lokert edition, he refers the description to some not better-specified 'alii'.[78]

Buridan's model and anatomo-physiological description, then, have a background from which Buridan took inspiration. At the same time, the accounts we have found in Kilwardby and Tommaso del Garbo do not precisely overlap with Buridan's. Kilwardby's account involves nervous connections between the brain and the heart, with species and spirits moving to the heart. However, his account does not trace a defined double connection between the two organs, with a passage linking the frontal part of the brain and the heart, and a second passage linking the heart to the dorsal part of the brain, where memory is located. In Kilwardby, moreover, we do not have the same description of phenomena of internal sensation as it is displayed by Buridan in his question on the *De anima*. In Tommaso's account, the description of the connections between the heart and the brain is not exactly clear. For example, it is not easy to understand if the connections he mentions as carriers of tempered heat from the brain to the heart are the same as the ones through which the alterations originating from sensible objects go from the brain to the heart. Furthermore, he presents philosophers' will of integrating the brain in sensitive processes mostly as

78 See the text in the manuscript version (Stanek's edition): 'Alia solutio ponitur, credo veriorem, et secundum quam concordantur opiniones medicorum cum opinione Aristotelis. Dicta ergo difficultas solvitur sic: dicitur quod omnia organa exteriora sensuum habent congregationem suam primam in capite et, mediante (mediate *ed.*) capite, species sensibilium multiplicantur finaliter ad locum cordis, et ibi complentur iudicium et sensatio. Et sic concordantur opiniones medicorum cum opinione Aristotelis dicendo quod in capite sive in anteriori parte cerebri est organum ad quod congregantur omnes species sensibilium in exterioribus sensibus receptae. Et ab illo loco est via ad cor plena subtilibus spiritibus per quos istae species multiplicantur, in quo corde perficitur sensatio et iudicium de omnibus sensibilibus'. PN*ms*, *De somno et vigilia*, q. 3, ll. 134–144, 182. See the text in the Lokert edition: 'Et ideo alii satis probabiliter respondendum dicunt quod omnia organa sensitiva exteriora congregationem suam primam habent in capite et ab eis omnes species sensibilium undique congregantur ad caput et de capite multiplicantur finaliter ad locum cordis ubi perficitur sensatio et iudicium de omnibus sensibilibus et dicunt isti quod per istam viam debent concordari opiniones Aristotelis et Commentatoris cum opinionibus aliorum omnium. In capite, scilicet in anteriori parte cerebri, est organum communem ad quod congregantur omnia organa sensitiva exteriora et per quod species multiplicantur ad cor, sed in corde et in capite completur sensatio et iudicium de omnibus sensibilium'. QSV$_L$, q. 3, f. XLIIII^{vb}.

an attempt of explaining how the excessive heat of the heart can be tempered and consequently be suitable for internal sensation. Buridan is aware of the fact that an excessive cardiac heat can be a problem for sensation,[79] but Buridan's account of the role of the brain in internal sensation does not focus on this issue: he does not even mention the alteration of cardiac heat in his description of brain-heart connection. The second description of the brain-heart connections that Tommaso ascribes to philosophers, namely the one about the convergence of the external sense organs in the brain and, then, the arrival of alterations originating from sensible objects to the heart from the brain, seems closer to Buridan's descriptions and theoretical aims. However, we do not see precisely the two passages connecting the frontal part and the dorsal part of the brain to the heart. Moreover, we do not see, in Tommaso's account, all the functions Buridan precisely ascribes to his anatomo-physiological construction. Tommaso just describes a passage of sensations from the brain to the heart to be properly 'judged' by this second organ.

To sum up, Buridan's anatomo-physiological description (and explanation of important phenomena related to internal sensation based on it) has to be contextualized in previous and contemporary discussions on the issue of the localization of the common sense in which anatomical connections between heart and brain were mentioned or more extensively described. At the same time, as often happens with Buridan, he was able to develop a personal and highly elaborated model that seems not precisely traceable back on any previous theoretical account.[80]

---

79 See the argument in favor of the *opinio medicorum* in QDA$_3$, II, q. 24, 391 and Buridan's answer to it in QDA$_3$, II, q. 24, 406.

80 This hypothesis, nevertheless, could be confirmed only when an *extensive* and *comprehensive* study of the medieval theories on the localization of the common sense preceding and contemporary to Buridan will be outlined. Various important elements about medieval theories on the localization of the commom sense can be collected from D. Jacquart, *La médecine médiévale dans le cadre parisien, XIV^e–XV^e siècle*, cit., esp. 106–108, 357–364, and 402–406 (for the Parisian medical panorama); N. Siraisi, *Taddeo Alderotti and his Pupils.*, cit., esp. 192–195; P.-G. Ottosson, *Scholastic Medicine and Philosophy.*, cit., esp. 219–227 (for the Italian medical framework); and from the general contributions by N.H. Steneck, *The Problem of the Internal Senses in the Fourteenth Century*, cit.; W. Pagel, 'Medieval and Renaissance Contributions to Knowledge of the Brains and its Functions', in: F.N.L. Poynter (ed), *The History and Philosophy of Knowledge of the Brains and its Functions: an Anglo-American Symposium, London, July 15th–17th*, Israël, Amsterdam 1957, 95–114; A. de Libera 'Le sens commun au XIII^{e} siècle. De Jean de La Rochelle à Albert le Grand', *Revue de Métaphysique et de Morale*, 96, 4 (1991) 475–496; D.N. Hasse, *Avicenna's* De anima *in the Latin West. The Formation of a Peripatetic Philosophy of the Soul, 1160–1300*, The Warburg Institute-Aragno Editore, London-Torino 2000; S. Knuuttila, 'Aristotle's Theory of Perception and Medieval Aristotelianism', cit.; and O. Weijers, 'L'organe du sens commun chez les auteurs de la première moitié du XIII^{e} siècle', cit. It would be particularly useful to develop a deeper

3.2.1.3.3. The Influence of Buridan's Model

Buridan's explanatory model of internal sensation, together with his way of settling the issue concerning the localization of the common sense, turned out to be convincing for several generations of scholars, starting at the end of the fourteenth century and continuing until well into the sixteenth century.

Simo Knuuttila once observed that Buridan's view of the localization of the common sense was '... repeated by many late medieval and Renaissance authors ...', referring to Peter of Ailly in Paris (in first half of the fifteenth century), and Jodocus Trutfetter of Eisenach and Bartholomeus Arnoldi of Usingen in Erfurt (in first half of the sixteenth century).[81] It is indeed likely that Buridan was the main direct source for these authors' accounts of the problem of the localization of the common sense.[82] However, none of them presents either the anatomo-physiological model or the detailed considerations on the localization of the common sense as they are described in Buridan's *De anima* commentary. In his *Tractatus de anima*, Peter of Ailly does not present the same extensive account of the localization of the common sense as Buridan. He just quickly mentions a 'certain way' (*quaedam via*) transmitting the

study on twelfth- and thirteenth-century theories about the localization of the *sensus communis* and, as far as Buridan's century is concerned, to see how fourteenth-century philosophers and physicians treated this issue later on. From P. Marshall, 'Parisian Psychology in the Mid-fourteenth Century', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 50 (1983), 101–193, it can be inferred that the topic of the localization of the common sense is present in at least another commentary on the *De anima* of the mid-fourteenth century: Marsilius of Inghen's *Quaestiones* De anima contained in the Wien, Österreichische Nationalbibliothek, Cod. 5437, ff. 365^{r}–411^{v}. In general, it would be fundamental to take into account not only on the commentaries on the *De anima*, but also on the commentaries on the *Parva naturalia*. In fact, the question on the localization of the common sense was addressed by philosophers in both the traditions of commentaries. See, in this respect, the recent catalogue of thirteenth- and early fourteenth-century commentaries on the *De somno et vigilia* in S. Ebbesen, C. Thomsen Thörnqvist and V. Decaix, 'Questions on *De sensu et sensato*, *De Memoria* and *De Somno et Vigilia*', cit., esp. 96–115. Moreover, as already remarked, for a survey on the late medieval theories on the localization of the common sense, also the medical authors should be taken into account. The case of Tommaso del Garbo shows that this topic was extensively addressed also in treatises on theoretical medicine. More precisely, both the Italian and the French medical *milieux* could offer interesting texts on this topic.

81 See S. Knuuttila, 'Aristotle's Theory of Perception and Medieval Aristotelianism', cit., esp. 12–13 and footnote 38.

82 On the influence of Buridan's psychology at the University of Erfurt in the sixteenth century, see P. Kärkkäinen and H. Lagerlund, 'Philosophical Psychology in 1500: Erfurt, Padua and Bologna', in: S. Heinämaa and M. Reuter (eds), *Psychology and Philosophy: Inquiries into the Soul from Late Scholasticism to Contemporary Thought*, Springer, Dordrecht 2008, 27–45 and P. Kärkkäinen, 'Psychology and the Soul in Late Medieval Erfurt', *Vivarium* 47, 4 (2009), 421–443.

sensible species from the brain to the heart. Peter of Ailly's text presents a traditional harmonizing solution to the issue of the localization of the common sense and does not describe precisely the two connections between the frontal part of the brain and the heart and between the heart and the dorsal part of the brain we find in Buridan's *De anima*. Nevertheless, we have a clue that Peter was influenced by Buridan's doctrine because he uses the term 'subiective' to refer to the modality in which sensation can be said to take place in the heart.[83] This term, as far as the texts considered in this thesis are concerned, seems to have been *technically* used within the topic of the localization of the common sense only by Buridan and not by scholars preceding him.[84] Both Jodocus Trutfetter and Bartholomeus Arnoldi deal with the controversial issue of the localization of the common sense in their natural philosophical works. They present the traditional two-organs solution, by mentioning connections between the organs of the external senses and the brain, and between the brain and the heart.[85] They also mention the fact that, during sleep, there is a lack of sensation due to the closure of the passages between the brain and the heart.[86] Nevertheless, none of them

83 'Haec autem apparens contrarietas (*sc.* the *opinio medicorum* and the *opinio philosophorum* CB) videtur posse concordari dicendo quod organum sensus communis est in corde, scilicet *subiective* et completive, sed est in cerebro dispositive, non quod ibi fiat sensatio, sed quia omnes species sensibilium prius congregantur in ipso et inde *per quandam viam* transeunt ad cor, ubi fit sensatio'. See Peter of Ailly, *De anima*, ed. by O. Pluta, in: *Die philosophische Psychologie des Peter von Ailly. Ein Beitrag zur Geschichte der Philosophie des späten Mittelalters*, Grüner, Amsterdam 1987, 26. Italics is mine.

84 For the list of names and references to the texts of these scholars, see *supra*, footnote 38.

85 See the following passages from the two authors: 'Verum apparens hec diffidentia facile in concordia coit dicendo organum sensus communis radicaliter et principaliter esse in corde, dispositive autem sive administrative et instrumentaliter in cerebro, non quia ibi fiat sensatio, sed quia omnes spiritus sensibilium principio in ipso congregantur ac subinde petunt cor ubi fit consumata sensatio' See Jodocus Trutfetter, *Summa in totam physicen*, Erfurt 1514, book VIII, treatise I. 'Ad primum dicitur medicos probare organum sensus communis esse in cerebro administrative et dispositive quia ibi congregantur sensus exteriores a quorum organis veniunt intentiones in organum sensus communis quod est in cerebro tamquam minister cordis in quo est organum sensus communis radicaliter iniciative et completive quia a corde mittuntur spiritus ad cerebrum et a cerebro ad organa sensuum exteriorum'. See Bartholomeus Arnoldi de Usingen, *Exercitium de anima*, Erfurt 1507, book II. '... ab illo (*sc.* from the heart CB) tamquam fontem diffunduntur spiritus et calores ad sentiendum requisiti usque ad cerebrum ubi conveniunt omnia alia organa sensuum exteriorum. Et ulterius per diversos nervos ad diversa organa sensuum exteriorum mittuntur tales spiritus econtra mittuntur species sensibiles mediantibus sensibus exterioribus ad cerebrum ubi conveniunt omnia organa sensuum exteriorum et ille species ulterius per nervuum descendentes de capite usque ad cor diffunduntur ubi fit completum iudicium et completa sensatio'. See Bartholomeus Arnoldi de Usingen, *Parvulus philosophiae naturalis*, Leipzig 1499, ff. 107^{v}.

86 'Nec fit ligamentum sensus communis ex defectu spirituum vitalium sed ex infrigidationem

presents Buridan's peculiar description. Moreover, neither Trutfetter nor Arnoldi gives the same comprehensive account of the localization of the common sense as Buridan's.

Other authors seem to have followed Buridan's anatomical description more closely. One case in point is Nicholas of Amsterdam (d. 1437), whose account is not as detailed and comprehensive as Buridan's, but who nevertheless follows Buridan by mentioning two connections between the heart and the brain: one connecting the heart to the dorsal part of the brain (where memory is located), the other linking the heart to the frontal part of the brain.[87] Other fifteenth-century authors follow Buridan's treatment even more closely: this is the case, for example, of an otherwise unknown author named Johannes Eucles (or Ericles),[88] Lawrence of Lindores (d. 1437),[89] and Benedictus Hesse (d. ca. 1456).[90] All these authors structure their questions on the localization of the common sense following Buridan's outline faithfully, both in presenting the opposite opinions (*philosophorum* and *medicorum*) and in the way of solving the question. Nevertheless, they generally limit themselves to merely

---

humorum et vaporum in viis intermediis inter cor et caput qui obstruunt meatus somnumque faciunt pervenire'. See Jodocus Trutfetter, *Summa in totam physicen*, Erfurt 1514, book VIII, treatise I. 'Ad tertium dicitur ligamentum sensus communis non pervenit ex defectu spirituum vitalium, sed ex infrigidatione humorum et vaporum in viis intermediis inter cor et caput qui obstruunt meatus somnunque faciunt pervenire quia sensus exteriores sentire non possunt nisi mittantur spiritus a corde etcaetera'. See Bartholomeus Arnoldi de Usingen, *Exercitium de anima*, Erfurt 1507, book II.

87 On the similarity between Buridan's and Nicholas' account, see N.H. Steneck, *The Problem of the Internal Senses in the Fourteenth Century*, cit., 253–280. Note, however, that Steneck thought that the text he was comparing with Nicholas' was by Henry Totting of Oyta. Sander de Boer has pointed out that the text Steneck was referring to is in fact a manuscript copy of the final redaction of Buridan's questions on *De anima*. See S. De Boer, 'Buridan on the Internal Senses', cit., 405–406. See Nicholas' *Disputata circa libros de anima*, 106 a: '... notandum est quod ab omnibus sensibus exterioribus procedunt nervi per anteriorem partem capitis ad quis partem deveniunt species omnium sensibilium exteriorum, quae ulterius procedunt ad cor in quo tunc fit sensatio a virtute cogitativa communi, a qua quidem sensatio procedunt ulterius species usque ad posteriorem partem capitis quae ibidem reservantur', I have taken the text from Steneck's book, see N.H. Steneck, *The problem of the Internal Senses in the Fourteenth Century*, cit., 280.

88 Johannes Eucles, *Quaestiones* De anima, II, q. 24 (*Utrum sensus communis debet poni vel in cerebro seu in capite*), Ms. Leipzig, Universitätsbibliothek, 1416, ff. 206^{vb}–207^{vb}.

89 Lawrence of Lindores, *Quaestiones super libros* De anima, II, q. 25 (*Utrum organum sensus communis ponendum sit in corde vel in cerebro seu in capite*), Ms. Kraków, Biblioteka Jagiellońska, 705, ff. 243va–244^{rb}.

90 Benedictus Hesse, *Quaestiones disputate super tres libros* De anima, II, q. 80 (*Utrum organum sensus communis sit ponendum in cerebro aut in capite*), ed. W. Bajor, *Benedicti Hesse Quaestiones disputate super tres libros 'De anima' Aristotelis (Libri II et III). Editio critica et inquisitio historico-philosophica*, Wydawnictwo KUL, Lublin 2011, 313–317.

paraphrasing (more or less closely) Buridan's question, leaving aside the richness of Buridan's account, his deeper theoretical aims and results. As a consequence, these fifteenth-century accounts are generally more standard in their search to reconcile the *opinio medicorum* and the *opinio philosophorum*. Yet, there is an author, close to Buridan in time, whose account represents, at the same time, a clear example of the influence of Buridan's model and a capacity of adding new elements and theoretical depth to it. This is Blasius of Parma (d. 1416). Blasius follows Buridan closely in his long question on the localization of the common sense (question II.27 of his commentary on Aristotle's *De anima*). His presentation of the two opposite opinions follows Buridan's one. Likewise, Blasius' conclusions do not deviate from Buridan's. He advocates a cardiocentric position, opts for a conciliatory solution of the controversial topic by stressing the auxiliary role of the brain and, although he does not propose the same anatomo-physiological model as Buridan, he presents the problems related to internal sensation in terms of connections and passages of species and spirits between the heart and the brain. At the same time, Blasius' question differs from Buridan's by adding some interesting new elements to Buridan's discussion. The major example is a '*difficultas*' concerning the identification of the common sense and the intellective soul. Blasius, here, elaborates on a theoretical point ignored altogether by Buridan and by the vast majority of his followers.[91]

Buridan's model seems to have had an impact also on a figurative tradition of images drawn within late medieval natural philosophical manuscripts.

One of these images is drawn within an anonymous set of questions on natural philosophy likely conceived in the Viennese *milieu* under the influence of Parisian heritage: it is found in ms. Prague, Národní knihovna, 724 (IV.F.18) (ff. 133^{a}–169^{a}), f. 143^{v}. This image seems actually to be very close to Buridan's description of the mechanism of internal sensation: the common sense is located in the heart, there are passages connecting the heart to the frontal and dorsal part of the brain and these passages carry species and intentions that move between the organs of the external senses and the heart, and between the heart and the reservative organ in the posterior part of the head.

91 See Blasius of Parma, *Quaestiones super libros* De anima, II, 27, Ms. Città del Vaticano, Biblioteca Apostolica Vaticana, Chigi O. IV. 41 (ff. 196^{vb}–198^{va}) and Ms. Napoli, Biblioteca Nazionale, VII. G. 74 (ff. 149^{r}–153^{v}). An edition of Blasius' text on the common sense and further details on his account, are available in C. Beneduce and P.J.J.M. Bakker, 'John Buridan and Blasius of Parma on the Localization of the Common Sense', forthcoming.

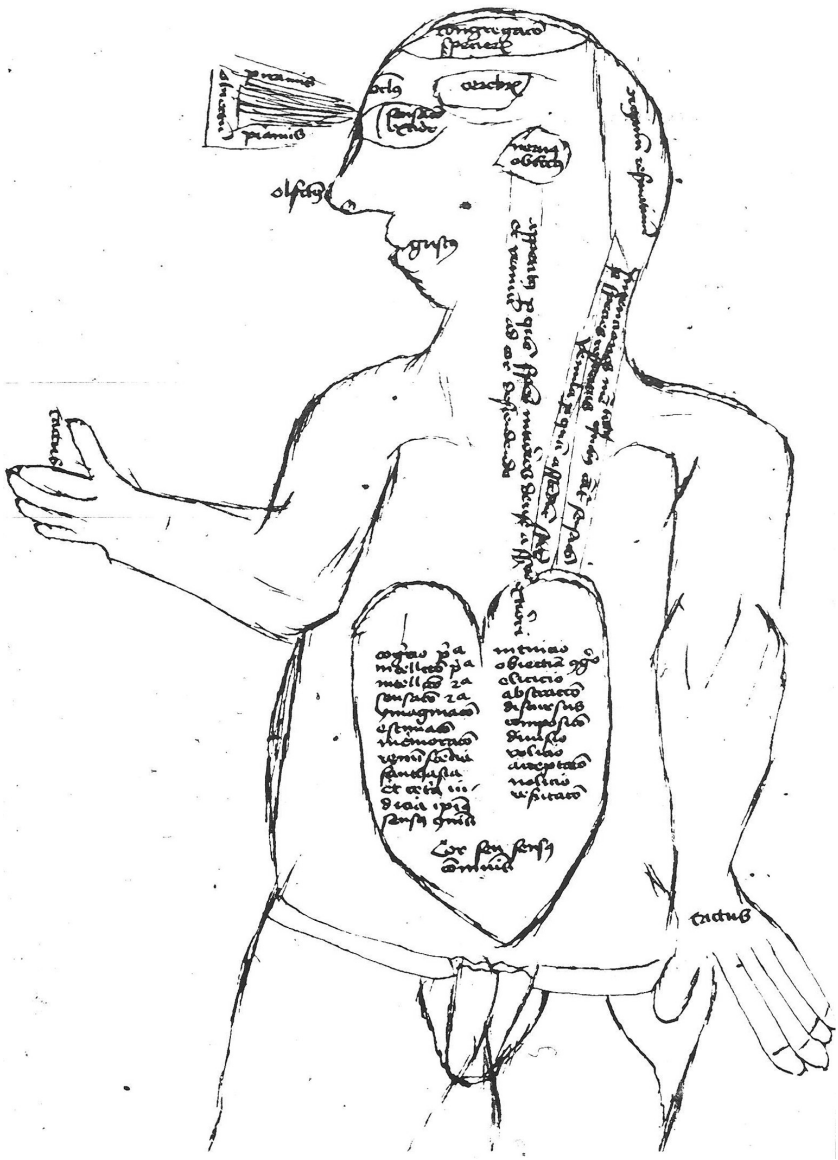

FIGURE 3 *Ms. Prague, Národní knihovna České republiky, 724 (IV.F.18), f. 143v.*[92]

92 Reproduced with the permission of the National Library of the Czech Republic.

In the image it can be read what follows. The names of the external senses: 'olfactus' (besides the nose), 'gustus' (in the mouth), 'tactus' (twice, near the two hands), 'oculus' (in the eye), and

Another image is sketched in the ms. Bayerische Staatsbibliothek München, Clm 18794. It is at the end of a section of the manuscript in which several questions on the D*e anima* are reported. From f. 93^{r} to f. 195^{v}, there seems to be Buridan's D*e anima* in *tertia lectura*.[93] From f. 199ra to f. 237^{vb} there are some questions on the second book of the D*e anima*. Patar suggests that this is a summary of Buridan's D*e anima* in *tertia lectura*, not ascribable to Buridan himself, and dated 1452.[94] The image is, more precisely, at the end of this set of questions, especially after a question on the localization of the common sense in which the 'connections' (*viae*) between the heart and the brain are described. The question does not overlap with Buridan's question on the localization of the common sense in the D*e anima* in *tertia lectura*.[95] However, the image clearly shows two connections between the heart and, respectively, the frontal part of the brain (where the external senses converge) and the dorsal part of the brain (where the 'organum reservativum' is placed) [See figure 4].

There is yet another image I came across, which, at a first glance, resembles Buridan's anatomical description in the D*e anima* commentary. It is in a text of Peter of Dresden's *Parvulus philosophiae naturalis* with an anonymous commentary: it is found in ms. Basel, Universitätsbibliothek, F VII 4 (ff. 123^{r}–177^{v}), f. 173^{r}.[96] However, a closer look to this image reveals that it is much less faithful to Buridan's description: first, the name 'common sense' is inscribed in the head, under the decorated half circle

'obiectum', 'piramis' twice (out of the eye). Up on the head: 'congregatio specierum'. Respectively below the eye and right to the eye: 'sensatio exterior' (?) and 'cerebrum'. Below 'cerebrum': 'nervus obticus'. Back on the head: 'organum reservativum'. In the first vertical sequence from the left: 'appetitus per quem species interiores descendunt a sensatione exteriori et veniunt ad cor'. In the second vertical sequence from the left: 'venula per quam ascendunt species'. In the third vertical sequence from the left: 'intentiones mediantibus quibus causatur sensatio per species reservatas'. In the heart, on the bottom: 'cor seu sensus communis'. In the heart, on the left side: 'cognitio prima, intellectio prima, intellectio secunda, sensatio secunda, imaginatio, estimatio, memoratio, reminiscentia, fantasia, et cetera iudicia ipsius, sensus communis'. In the heart, on the right side: 'Intuitio, obiectiva cognitio, elicitio, abstractio, discursus, compositio, divisio, volitio, acceptatio, nolitio, refutatio'.

93 This has been in fact indicated by B. Patar in his edition of the anonymous commentary on the D*e anima* he ascribed to Buridan. See Anonymous, *Quaestiones* De anima, ed. by B. Patar, in: *Le* Traité de l'âme *de Jean Buridan* (prima lectura), cit., 39*.

94 See I*vi*.

95 I add that the *folio* in which the image is posed seems not to be in continuity with the previous *folio*. This last, in fact, ends with a completed question and a blank space. The last *folio*, namely the one in which the image is posed, seems to present a section of a question on sensation.

96 Note that, in the Basel manuscript, there is another image with representation of internal senses that covers two *folia*, at ff. 179^{v}–180^{r}. The image is colored in orange-brown and is not well readable.

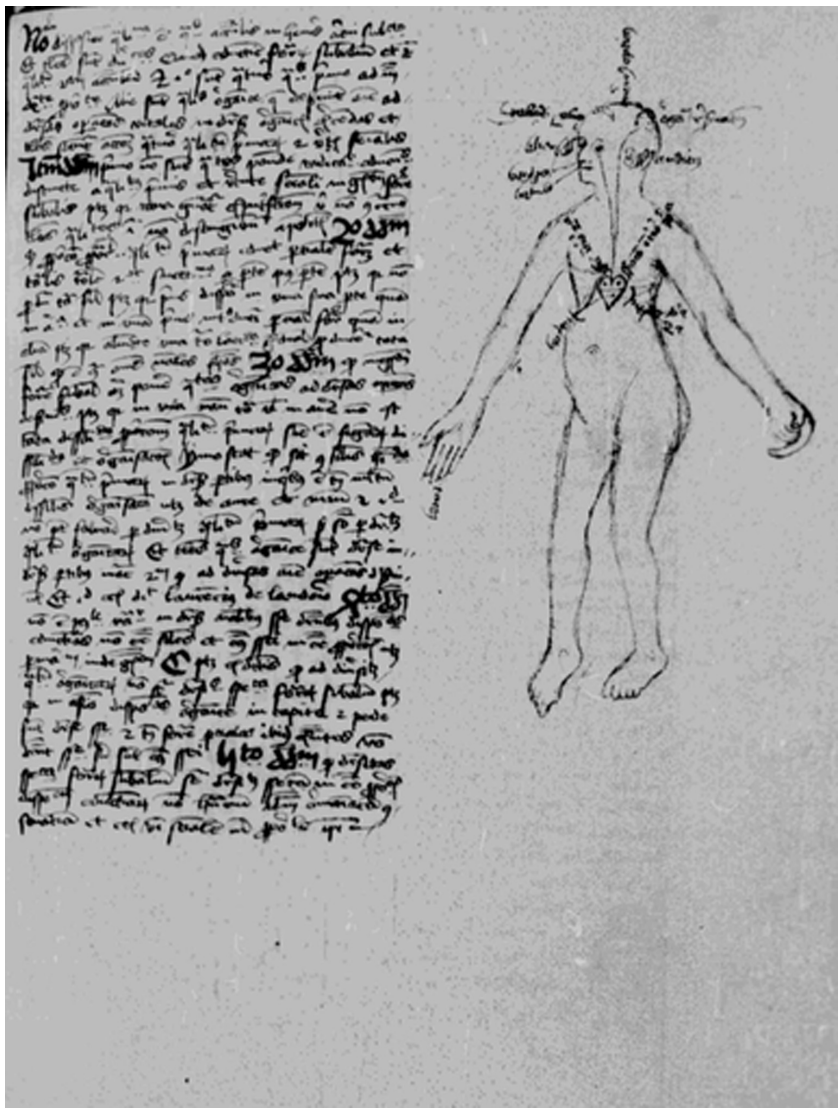

FIGURE 4 *Bayerische Staatsbibliothek München, Clm 18794, imagenumber 723.*[97]

97 Reproduced with the permission of the Bayerische Staatsbibliothek, München. The image is protected by a Creative Commons License.

in which the 'cerebrum' is identified; moreover, even though, apparently, there are ways connecting the heart to the head, the inscriptions among these lines are mostly intended to describe the functioning of the sense of touch [See figure 5].

3.2.1.3.4. Conclusions

I shall remark here the main outcomes of my analysis of Buridan's texts on the localization of the common sense.

Buridan's solution of the issue of the localization of the common sense is inspired by a traditional intent of harmonizing the Aristotelian heart-centered view and the medical brain-centered view. Nevertheless, against this traditional task, in his q. II.24 of the *De anima* commentary, Buridan displays a long and elaborated treatment of the topic of the functioning of internal sensation. In other words, Buridan takes the controversial issue of the localization of the common sense not merely as a unavoidable topic do be addressed in order to find a concordance between authorities, but rather as an occasion to elaborate on his precise view about sensitive cognition. In spelling out the details of his position, he stresses his adhesion to cardiocentrism but, at the same time, shows his willingness to integrate the medical doctrine about the centrality of the brain in the process of sensitive cognition.

In order to provide his account, Buridan presents an anatomo-physiological description of connections between the heart and the brain. This description takes inspiration from previous accounts to the extent that, in philosophical texts, it was not uncommon to outline physical passages between heart and brain in solving the issue of the localization of the common sense. At the same time, Buridan's own theoretical explanatory model, together with the physical description of connections linking the heart and the brain on which it is based, is a peculiarity of Buridan's mature production, not overlapping with previous texts. His way of dealing with the issue of the localization of the common sense, together with that model of explanation of internal sensation and that anatomo-physiological description, had a wide influence on later scholars from the late fourteenth century to the early sixteenth century. However, these scholars generally seem to simplify Buridan's explanatory model and not to propose the very details of Buridan's anatomo-physiological construction. This construction is visible in some images drawn in manuscripts, confirming the influence of Buridan's account of the localization of the common sense over the centuries.

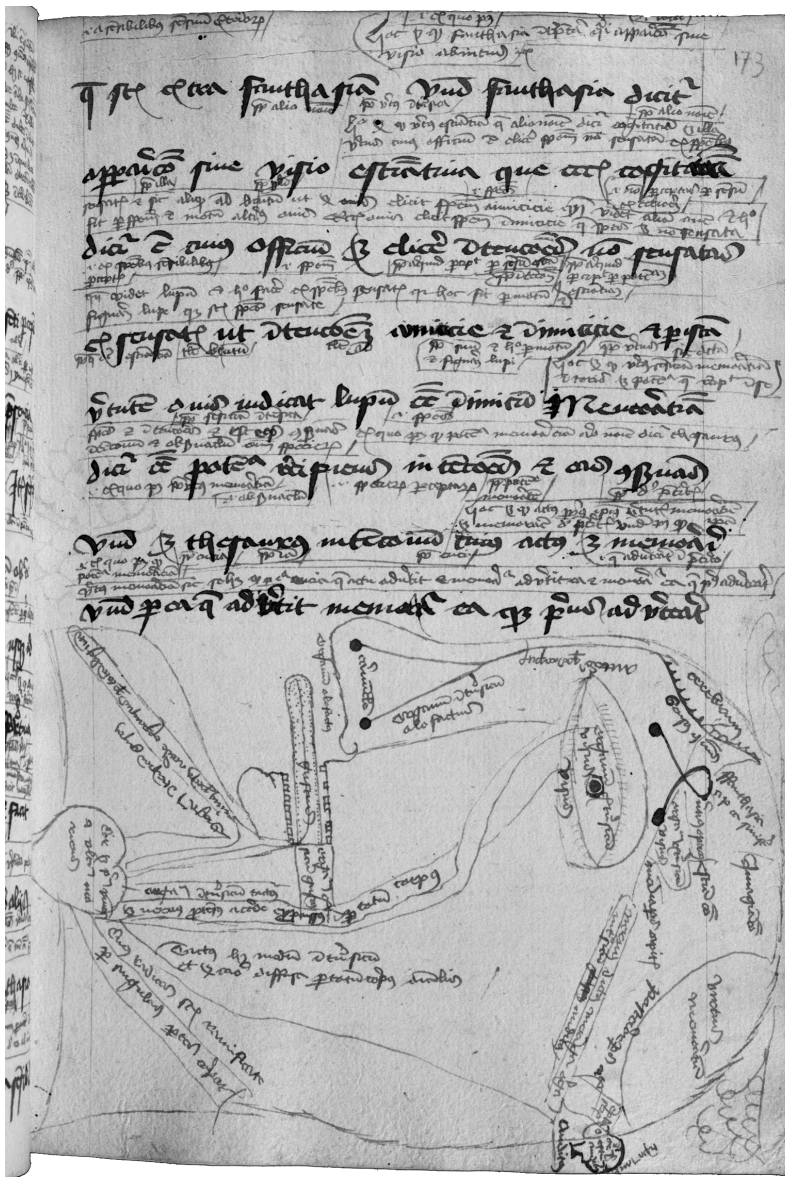

FIGURE 5 *Ms. Basel, Universitätsbibliothek,* F VII 4, *f.* 173^{r} *(www.e-codices.unifr.ch).*[98]

98 Reproduced with the permission of e-codices. The image is protected by a Creative Commons license.
The inscriptions in the image are less readable than in the previous image. Here a partial transcription. Top of the head, left: 'Cerebrum'. Under the decorated half circle in which 'cere-

3.2.2. *The Origin of Veins and Blood*

The *opinio philosophorum* claimed the origin of veins and blood to be the heart; on the other hand, according to the *opinio medicorum* veins and blood originate in the liver. Just as for the case of the corporeal localization of sensation, this medieval opposition between *opiniones* hides a wider debate between ancient doctrines concerning the issue of the roles of the various parts of the body. Briefly, the Aristotelian cardiocentric position was valid also concerning the process of nutrition. According to Aristotle, the heart has a primary role in the digestion process and in the production of blood.[99] On the contrary, the Galenic tripartite model considered the liver to be the origin of veins, the source of blood, and the primary organ of nutrition.[100]

Buridan addresses the topic of the origin of veins and blood in q. 1 of his commentary on the *De morte et vita*: *Utrum cor sit primum principium sanguinis et venarum in animali habente cor*.[101]

---

brum' is inscribed: 'Sensus communis'. To the right: 'Ffanthasia in (?) parte (?) sinistra'. To the right: 'Imaginatio', 'Estimatio'. Left from 'Estimatio': 'Nervus opticus'. Below 'nervus opticus': 'Organum extrinsecum (?) visus'. Below and to the right of this wording: 'Media pars capitis'. To the right of this wording: 'Posterior pars capitis' and to the right of this: 'Emplastrum'. Besides the previous wording: 'Auditus' and 'Organum exstrinsecum auditus'. Under 'media pars capitis' and 'posterior pars capiti': 'Nervus dictus meninga organum instrinsecum auditus'. Above 'Posterior pars capitis': 'Virtus memorativa'. In the eye: 'Organum extrinsecum visus'. Right under the eye: 'Visus'. In the right part of the nose: 'Organum intrinsecum olfactus'. Between the two nostrils: 'Carvuncule' (for carunculae?). Under the nose: 'Organum olfactus'. On the tongue: 'Gustus'. Just right of the tongue: 'Organum extrinsecum gustus'. Against 'organum extrinsecum gustus' in the tube coming from the heart: 'Organum intrinsecum tactus scilicet (?) nervus protensus a corde expanssus per totum corpus'. To the right of this last sentence: 'Tactus habet medium intrinsecum et est (?) caro diffusa per totum corpus in (?) nobis (? or membris?)'. In the heart: 'Cor scilicet (?) primum vivens et ultimum moriendi'. Right of the heart, going upwards to the back of the head: 'Cuius (?) radices (?) sunt ramificate per singulas partes corporis'.

99 For an account of Aristotle's theory of digestion and nutrition, see M. Boylan, 'The Digestive and Circulatory System in Aristotle's Biology', *Journal of the History of Biology*, 15, 1 (1982), 89–118. On the centrality of the heart as the core-organ of digestion, nutrition, blood production and origin of veins in Aristotle, see Arist., *De som. et vig.*, 3, 458a15–16, Arist., *De iuv. et sen.*, *De morte et vita*, *De resp.*, 469a5–7, Arist., *De gen. an.*, II.6, 743a1, Arist., *De part. an.*, II.9, 654b11.

100 On the third part of the soul and the liver as the source of veins and blood, see Galen, PP 3; 10; 11; UP I, 217–220 K; II, 359 K ff; PHP, VI. Attention towards the liver as the third part of the soul is paid by P. De Lacy, 'The Third Part of the Soul', in: P. Manuli and M. Vegetti (eds), *Le opere psicologiche di Galeno*, Bibliopolis, Napoli 1986, 43–63, R.J. Hankinson, 'Galen's Anatomy of the Soul', *Phronesis*, 36, 3 (1991), 197–233, and T. Tieleman, *Galen and Chrysippus on the Soul*, Brill, Leiden 1996, 55–60.

101 Also for this question, I am following the edition of Buridan's *Parva naturalia* prepared by M. Stanek.

He opens the *quaestio* with a refutation of the opinion according to which veins and blood originate in the heart, in other words, with a refutation of the *opinio philosophorum*. This refutation is based on the authority of Galen, of Averroes' *Colliget*, and of the *anatomizantes*[102] and supported by some arguments in favour of the *opinio medicorum*.[103]

In favor of the opposite view, Buridan presents Aristotle's statements in the *De morte et vita*, *De somno et vigilia* and, especially, in the *De partibus animalium*.[104] Buridan also introduces the authority of Avicenna. In particular, he underlines an important aspect of the Avicennian conception of the epistemological relationship between philosophy and medicine: physicians do not go beyond sensation and stick to the phenomena; philosophers, on the contrary, led by rationality, go beyond sensation

---

The same question is also found in the Lokert edition of Buridan's commentary on the *Parva naturalia*, i. e., q. 2 on the *De iuventute et senectute sive de morte et vita* (henceforth: QJSMV$_L$, q. 2).

102 'Tunc arguitur quod cor non sit primum principium sanguinis et venarum auctoritate Galeni dicentis quod hepar est horum primum principium, et auctoritate Averrois in suo *Colliget* inquantum loquitur de anatomia membrorum, immo communiter omnes anatomizantes anatomiam suam incipiunt de venis et non a corde'. See PN*ms*, *De morte et vita*, q. 1, ll. 11–15, 252.

103 The arguments run as follows: veins are stronger and bigger in the liver than in the heart, and entities are stronger the closer they are to their origin. The liver is the first principle of blood, as it is admitted, Buridan claims, by Aristotle as well. Compared to heart's nature, that of the liver is much more similar to blood; in fact, the liver has the same primary qualities as blood, namely hot and humid. Veins branch out from their principle to reach all the corporeal members; but the place where the veins start to fork is exactly the liver; hence the liver must be the origin of veins. See Buridan's text: 'Item: ad hoc arguitur rationibus, quia unumquodque debet esse fortius in suo principio quam in sequentibus. Unde primum principium universaliter est fortissimum et potentissimum; sed venae sunt fortiores et multo grossiores in hepate quam in corde, prout manifestum est ex anatomia; igitur etc. Item: quod hepar sit principium sanguinis arguitur sic: quia in eo primo generatur sanguis. Et hoc videtur Aristoteles concedere in *De somno et vigilia* dicens 'deforis alimento ingrediente in susceptiva loca fit evaporatio ad venas'; ibi vero permutatur in sanguinem et nutriatur, et vadit ad principium, id est ad cor; igitur ante generatur sanguis antequam vadit ad cor, quod non esset nisi generetur in hepate; igitur hepar est primum principium sanguinis. Item: hepar est magis simile sanguini, quia calidum et humidum, et tenere substantiae; cor autem ⟨non CB⟩ est huiusmodi; ergo cum generans debeat esse simile generato, hepar magis videtur esse primum principium generativum (generatum *ed.*) sanguinis quam cor. Item: omnes ponunt a stomacho recipi (recipe *ed.*) in hepate cibum et ibi generari quattuor humores et distingui, scilicet sanguinem, choleram, phlegmam, melancholiam; ergo hepar est primum principium sanguinis et aliorum humorum praedictorum. Item: a principio venarum debent venae ramificari ad omnia membra; Et huiusmodi ramificatio fit ab hepate; ergo …'. See PN*ms*, *De morte et vita*, q. 1, ll. 16–37, 252–253.

104 'Oppositum tenet Aristoteles in isto libro et in libro *De somno et vigilia*, et magis videtur hoc declarare in tertio libro *De partibus animalium*'. See PN*ms*, *De morte et vita*, q. 1, ll. 39–40, 254. See Arist., *De som. et vig.*, 3, 456a30 and Arist., *De part. an.*, III.4, 666a1–9.

and search for the ultimate causes of those phenomena.[105] The distinction between philosophers grasping the ultimate causes of things and proceeding from universals to particulars, and physicians following the appearance of the senses and proceeding from particulars to universals is a typical trait, for example, of Albert the Great's solution of various controversial issues between philosophers and physicians.[106] It is important to remark that Buridan does not seem to embrace this solution to the controversy, neither here nor in the other case studies analyzed in the present thesis. I will come back to this trait in my final conclusions. Let us go on, now, with Buridan's text.

In the case of the question on the origin of veins and blood, contrary to what we have found in the account of the localization of the common sense, Buridan does not express his explicit agreement with the Aristotelian position.[107] He immediately summarizes Aristotle's position (i.e., veins and blood take their origin from the heart)[108] and presents a series of arguments in favor of it. Before giving these arguments, Buridan specifies that even though some arguments are about veins and others about blood, all arguments are valid for both veins and blood: in fact, blood and veins must have the same principle given that veins accomplish the task of transporting blood from its origin to all the other corporeal members.[109] Against this background, Buridan

105 'Et Avicenna cum Aristotele dicit quod in talibus sermones Aristotelis sunt veriores quam sermones medicorum, quia medici non transcendunt sensum quantum ad tales. Sermones autem Aristotelis sunt secundum rationes, quae transcendunt (transcenduntur *ed.*) sensus'. See PN*ms*, D*e morte et vita*, q. 1, ll. 41–44, 254. For a short summary of Avicenna's conception of the relationship between medicine and philosophy see J. Chandelier 'Medicine and Philosophy', cit., esp. 737–738.

106 This type of solution has been identified by M. de Asúa especially in Albert the Great's *Quaestiones de animalibus* and D*e sensu et sensatu*. See M. de Asúa, 'War and Peace. Medicine and Natural Philosophy in Albert the Great', cit., esp. 276–277, 286–290, and 295–296.

107 See *supra*, 68. The Lokert edition differs significantly on this point from the text preserved in the manuscripts. In the Lokert edition we find an explicit agreement on the part of Buridan with the Aristotelian cardiocentric position: 'Tunc dico cum Aristotele quod sanguis et vene habent primum principium suum in corde sive quod cor est primum principium sanguinis et venarum'. See QJSMV$_L$, q. 2, f. LIII^{vb}.

108 'Breviter dicendum (dividendum *ed.*) est cum Aristotele quod venae et sanguis habent suum principale principium cor vel in corde'. See PN*ms*, D*e morte et vita*, q. 1, ll. 46–47, 254.

109 'Et est notandum quod rationabiliter debet concedi quod idem sit principium principale sanguinis et venarum, quia, sicut dicit Aristoteles, venae sunt organa deputata sive vasa ad deferendum (defendendum *ed.*) sanguinem a suo origine ad singula alia membra; ideo a principali principio sanguinis debent initiari venae. Et ideo si aliquae rationes arguunt specialiter quod cor sit principium sanguinis, debet concludi quod etiam sit principium venarum, et e converso si aliqui arguunt quod sit principium venarum, debet concludi quod sit principium sanguinis. Ideo ad

introduces the arguments that summarize and support Aristotle's cardiocentrism. For example, we find two arguments connected to each other and proving the origin of the veins from the heart: veins pass through the liver, the lungs, and the kidneys, but not through the heart; but veins must not pass *through* the place of their origin; hence they must originate from the heart.[110] Second, when the blood is in the veins, it is not in its own point of origin. In fact, blood is in the veins to be transported from its origin to another place in the body. But the veins are in the liver and not in the heart. Hence the blood must originate in the heart, namely in the place where it is *not yet* conducted through the veins.[111] From Aristotle is also taken the argument of the embryo: the heart, Buridan explains, is the first corporeal member to be formed and it is full of blood as an ampoule. Then, thanks to the virtue proper to the heart and to the virtue of the soul that inheres in the heart, the other members are formed around it. The heart is therefore the principle of blood and of all the other components of the body.[112]

---

conclusionem principalem Aristoteles tertio *De partibus animalium* arguit tam de sanguine quam de venis'. See PN*ms*, *De morte et vita*, q. 1, ll. 47–56, 254–255.

110 'Item: specialiter ipse arguit de venis, quia venae non debent penetrare suum principium originale, cum debeant ab ipso incipere. Sed venae penetrant et hepar, et pulmonem, et renes etc., et non penetrant ipsum cor. Et maxime notabiliter apparet quod penetrant hepar. Ergo non hepar, sed cor est earum originale principium'. See PN*ms*, *De morte et vita*, q. 1, ll. 65–69, 255. See Arist., *De part. an.*, III.4, 665b14–666a1–10. This Aristotelian argument is used also by Albert the Great in q. 3, of the third book of his *Quaestiones de animalibus*: 'Praeterea, illud est principium rei ad quod res terminatur et ⟨quod⟩ non penetratur ad ea; sed venae terminantur ad cor et ab eis non penetratur, tamen ab eis, scilicet venis, penetratur hepar; ergo etc.'. See Albert the Great, *Quaestiones super* De animalibus, ed. E. Filthaut, Aschendorff, Münster 1955, 16–19.

111 'Item: sanguis invenitur in corde sive in venis tamquam in primo fonte; venae autem sunt vasa ad deferendum (defendendum *ed.*) sanguinem; ideo ubi sanguis est in venis, est in via et non in origine; sed in hepate est in venis; et sic solo corde est sine venis; igitur etc.'. See PN*ms*, *De morte et vita*, q. 1, ll. 84–86, 256.

112 'Sed etiam probatur quod sit primum principium sanguinis, immo etiam omnium aliorum. Primo formatur cor (caput *ed.*) ⟨in⟩ embrionis generatione et invenitur plenum (plemum *ed.*) sanguine (sanguinem *ed.*) quasi una ampula, et convenienter eius virtute vel virtute animae in ipso insita formantur circa ipsum (ipsam *ed.*) consequenter alia membra, prout experti sunt anatomizantes; igitur cor est originale principium et sanguinis et omnium aliorum'. See PN*ms*, *De morte et vita*, q. 1, ll. 77–82, 256. The text is clearly corrupt when it reads 'caput' instead of 'cor'. It clearly appears from the argumentation as a whole. Moreover, Buridan is here reporting Aristotle's argument from the third book of the *De partibus animalium*, see Arist., *De part. an.*, III. 4, 666a10–15. See also the corresponding passage in the Lokert edition: 'Item quod cor sit principium et sanguinis et venarum et aliorum probatur per formationem embrionis quia primo inter omnia membra formatur cor et invenitur plenum sanguine unde nutritur. Deinde ex virtute cordis formatis formantur circa ipsum alia membra; ideo cum cor formetur primo, videtur quod primo vivat et quod sit principium

After having presented the arguments in favour of the medical opinion and the arguments in favour of the philosophical opinion, Buridan opens a new section of his *quaestio*. Strong doubts (*dubitationes*), Buridan says, remain open: how does blood move from the liver to the heart? And how does the blood go back from the heart to the liver to nourish it? Through which way (*via*) does the blood move from the heart to the other corporeal members? What is the substance of blood in the liver before its arrival in the heart? Does all the blood that nourishes corporeal members come from the heart?[113]

Buridan argues that there are two opinions about those questions.[114] The first opinion represents the Aristotelian cardiocentric position.[115] According to this position, Buridan explains, the process of nutrition and digestion partially occurs in the mouth, the stomach, and the liver, before it is completed in the heart. In the mouth the chewing of the food takes place; in the stomach, the nourishment is divided into a rough and a subtle part. The rough part is sent to the lower part of the stomach, while the subtle one is sent to the liver, where it is converted into blood. However, this blood is still imperfect because it does not possess nutritive qualities yet. So, through a major vein, this unperfected blood is carried to the heart where it is refined into nutritive blood: in this way the digestion is perfected. That nutritive blood goes back to the liver through a minor vein, which, divided into several little veins, reaches all the corporeal members allowing the blood to nourish the entire body.[116] These

---

vite et formationis aliorum membrorum et quod primo nutriatur, et ita erit primum principium nutritivum'. See QJSMV$_L$, q. 2, f. LIIII^{ra}.

113 'Circa dicta restant fortes dubitationes, videlicet quomodo sanguis movetur de hepate ad cor, et iterum revertitur de corde ad hepar ad nutriendum hepar, et per quam viam movetur ad singula membra de corde, et qualis substantiae sit sanguis in hepate, antequam sit in corde, et utrum totus sanguis, ex quo membra nutriuntur, veniat a corde vel non'. See PN*ms*, D*e morte et vita*, q. 1, ll. 99–103, 257.

114 'De quibus omnibus sciendum est quod in generali sunt de praedictis duae opiniones'. See PN*ms*, D*e morte et vita*, q. 1, ll. 104–105, 257.

115 Buridan refers to it as the opinion '… quae prima facie videtur esse Aristotelis …'. See PN*ms*, D*e morte et vita*, q. 1, l. 105, 257.

116 For the background of the Aristotelian description of these major and minor veins Buridan is mentioning here, see Arist., *Hist. an.*, III.3,513a16–26: 'The nature of the veins is as follows. There are two veins in the torax by the backbone, and lying to its inner side; and of these two the larger one is situated to the front, and the lesser one is to the rear of it; and the larger is situated rather to the right-hand side of the body, and the lesser one to the left; and by some this vein is termed aorta, from the fact that even in dead bodies they have observed the sinewy part of it. These have their originis in the heart, for they traverse the other viscera, in whatever direction they happen to run, without in any way losing their distinctive characteristic as veins, whereas the heart is as it were a

veins, Buridan underlines, are anatomically described as starting from the heart and reaching the liver. In addition, if any other digestion occurs in the other members, it happens with the help of the heart that sends, together with the nutritive blood, also the heat and spirits needed for the process of digestion. From this description, Buridan concludes that the heart constitutes the first principle of all the other corporeal members.[117]

The second opinion mentioned by Buridan shares with the philosophical position the basic assumption that the heart is the principle of heat and that this heat guarantees the digestion occurring in the stomach, the liver, and all the other members. Nevertheless, this opinion differs from the Aristotelian position because it claims that blood is not generated in the heart but in the liver. From the liver, some of the blood reaches the heart. A portion of this blood nourishes the heart while another portion is converted into sensitive and vital spirits. These spirits, through the minor vein, are sent back to the liver and, from there, through the ramification of the veins, reach the various corporeal members. Thanks to this blood full of spirits, the corporeal members can exercise their vital operations. On the other hand, the part of the blood that does not reach the heart is sent from the liver to the corporeal members to nourish them.[118] So, there is blood that nourishes the corporeal members and blood that serves

---

part of them (and that too more in respect to the frontward and larger one of the two), owing to the fact that these two veins are above and below, with the heart lying midway' in Aristotle, *The Complete Works of Aristotle*, ed. J. Barnes, 2 vols., Princeton University Press, Princeton, 1984, vol. 1, 815.

117 'Una est, quae prima facie videtur esse Aristotelis, quod in ore, in stomacho et in hepate fiunt quaedam digestiones praeparantes (properantes *ed.*) cibum ad hoc quod fiat debitum nutrimentum corporis et membrorum. Et est digestio in ore per masticationem et in stomacho per discretionem subtilis nutrimenti a grosso et inepto, et mittitur subtile ad hepar et grossum ineptum ad ventrem inferiorem, et in hepate illud subtile iam convertitur in sanguinem imperfectum, qui nondum est perfectus ad nutriendum. Et iste mittitur ad cor per unam magnam venam, et ibi fit perfectior digestio, secundum quam sanguis efficitur conveniens nutrimentum omnium membrorum, quo facto iste sanguis per quandam venam subtiliorem revertitur ad hepar. Et ista vena ramificatur ad omnia membra. Ideo dispergitur iste sanguis nutritivus ad omnia membra et illae venae per anatomiam inveniuntur procedere de corde ad hepar. Et si fiat ulterior digestio in membris, tamen hoc est per calorem et spiritus missos a corde ad singula membra. Ideo cor est omnium horum ⟨principium⟩ principale'. See PN*ms*, *De morte et vita*, q. 1, ll. 105–118, 257.

118 'Alia opinio est quod omnis digestio nutrimenti sive in stomacho, sive in hepate, sive in membris, est a calore naturali, qui per totum corpus provenit originaliter a corde. Ideo sic Aristoteles conceditur quod cor est primum et principale principium nutritivum et generativum sanguinis et aliorum. Sed dicit ista opinio quod sanguis non generatur in corde, sed in hepate, et ab ipso (ap ipsae *ed.*) hepate quaedam portio mittitur ad cor, et ex una parte eius portionis cor nutriatur, et ex alia parte per fortem calorem generantur spiritus sensitivi et vitales, qui per illam parvam venam revertuntur ad hepar et per ramificationem venarum mittuntur ad omnia membra, per quos spiritus omnia

as a kind of fuel through which the members perform their operations. Buridan explicitly claims that this position, the '*communis opinio medicorum*', is *rationalis* and *probabilis*, just as the previous one.[119] He also adds that the medical position and the Aristotelian opinion can be reconciled and that it is not easy to demonstrate which of the two must be considered more right than the other one.[120] In answering to the initial arguments, in the final part of the *quaestio*, Buridan shows a possible line along which this reconciliation is possible: the liver generates the blood first, but the process of the blood production is perfected only in the heart.[121] This is a clear parallel to the standard conciliatory solution of the issue of the localization of the common sense.

It must be eventually remarked that, in the *ad rationes* part, Buridan does not limit his discussion to the various arguments presented at the beginning (namely the arguments brought forward by the physicians). In fact, he also comments, although more briefly, on the Aristotelian arguments. This operation is unusual: according to the standard scheme of a *quaestio*, only the initial arguments (in this particular case, the ones in favor of the point of view of physicians) were supposed to be commented on, and solved. But Buridan, given that he presents the two opinions (i.e., the *opinio philosophorum* and the *opinio medicorum*) as equally plausible and in basic agreement, feels the need of commenting on both sets of arguments. It is therefore particularly interesting to see what Buridan has to say here about the Aristotelian position. In his view, the arguments in favor of the cardiocentric position do not actually conclude that blood is generated in the heart. Nor do they affirm that *all* blood is sent to the heart (to be processed and refined), but only a portion of it. According to Buridan, the core of the Aristotelian arguments, and their right content (shared also by the medical opinion), is that the heart is considered the principle of the natural heat, which is the original source of blood, of the vital operations, and of the formation of all the corporeal members in general.[122]

---

membra exercent suas operationes. Alius autem sanguis, qui non mittitur ad cor, mittitur ad omnia membra ab hepate, et eo nutriantur'. See PN*ms*, *De morte et vita*, q. 1, ll. 120–133, 258.

119 'Et haec est communis opinio medicorum, et rationalis et probabilis, sicut praecedens'. See PN*ms*, *De morte et vita*, q. 1, ll. 131–132, 258.

120 'Et potest concordari cum omnibus dictis Aristotelis'. See PN*ms*, *De morte et vita*, q. 1, l. 132, 258. 'Nec (ut *ed.*) est facile demonstrare quae istarum opinionum sit tenenda magis quam alia'. See PN*ms*, *De morte et vita*, q. 1, ll. 132–133, 258.

121 'Ad aliam potest dici quod in hepate generatur primo sanguis, sed non perfectus nec conveniens ad nutriendum, sed perficitur et repletur spiritibus in corde'. See PN*ms*, *De morte et vita*, q. 1, ll. 148–150, 259. 'Ad aliam conceditur quod ex cibo fit in hepate sanguis et alii humores. Sed ibi non perficitur sanguis ut sit conveniens nutrimentum'. See PN*ms*, *De morte et vita*, q. 1, ll. 156–157, 259.

122 'Et ita etiam omnes rationes quae fiebant pro opinione Aristotelis possunt deduci quia (quod *ed.*) non

3.2.2.1. Conclusions

Let me make a few conclusive comments on Buridan's discussion of the problem of the origin of veins and blood.

As in the case of the localization of the common sense, Buridan's intention of harmonizing the two traditions is clear. He speaks about the medical opinion as the one which '... potest concordari cum omnibus dictis Aristotelis'. And we saw that, ultimately, Buridan identifies the point of concordance between philosophers and physicians especially in the fact that both describe the heart as the source of heat necessary for all vital operations. Some of the answers to the initial arguments show that Buridan, just as in the case of the localization of the common sense, also wants to mention the most 'easy' and conciliatory solution to the problem of the origin of blood: blood is produced in the liver but it is perfected, as nutritive blood, in the heart. In q. 1 of the D*e morte et vita*, contrary to what he does for the case of sensitive cognition, Buridan does not give a detailed and unified account of the processes of nutrition and digestion using the conceptual tools offered by the medical tradition.

Nevertheless, the text clearly indicates that Buridan is neither uncritically supporting the Aristotelian position nor sticking at a summary of the 'easiest' way of solving the controversy without a personal, developed, and comprehensive analysis of the issue. Buridan does not show a willingness to support Aristotelian cardiocentrism in the case of the problem of the origin of veins and blood. For, at least in the manuscript version, Buridan does not use the formula 'Tunc dico cum Aristotele'. Moreover, he explicitly refers to the medical point of view as 'rationalis et probabilis sicut praecedens', i. e. as the philosophical one. Hence, he does not only say that the medical position can be harmonized with the philosophical one, but, more radically, that both opinions are *rational* and plausible. He even claims that it is impossible to determine which of the two opinions should be considered the right one. Finally, at the end of his discussion, he interprets the Aristotelian view in an important way by rejecting the idea that *all* the blood goes to the heart to be refined, and that it is sent to the corporeal members *only* by the heart. The Aristotelian view only holds true for part of the heat of the heart, being the ultimate cause for the possibility of the blood production, a point on which physicians agree too.

---

concludunt quod sanguis generetur in corde, nec quod totus mittatur ⟨ad⟩ cor, sed aliqua portio, sicut dicebatur, ita tamen quod secundum illas rationes bene conceditur quod cor est principale principium sanguinis (sanguis *ed.*) et omnium operationum animalis, et formationis omnium membrorum, quia haec omnia fiunt per calorem naturalem, qui a corde habet principium et originem'. See PN*ms*, D*e morte et vita*, q. 1, ll. 161–167, 259.

The cases of the localization of the common sense and of the origin of veins and blood, two important issues of the problem of the hegemonic organ, showed us some elements of Buridan's attitude vis-à-vis medicine. In dealing with these controversial issues, Buridan does not simply stick to an attempt of harmonizing the two contrary opinions, by briefly mentioning the contrary positions and giving the easy, traditional solutions to their opposition. Buridan offers, instead, personal and sophisticated re-elaborations of the controversial topics. These accounts are characterized by a lively dialogue between the natural philosophical and medical traditions: within a basic Aristotelian framework, Buridan makes as much space as possible for medical views. This ultimately leads to a revision of the Aristotelian view he is basically committed to.[123]

The following case study on the problem of generation, more specifically on some aspects of the controversy between philosophers and physicians as far as generation was concerned, will yield additional information about Buridan's way of dealing with such controversial topics and about his use of medicine.

123 By reading Buridan's question on the localization of the common sense against the background of the broader framework of the controversy between philosophers and physicians and, more generally, from the perspective of a study on the relationship between natural philosophy and medicine, it has been possible to shed more light on this issue considered in previous, very partial and sometimes wrong considerations on this topic. From this more general perspective considering the relationship between natural philosophy and medicine in Buridan's works, it can be seen how Buridan's adhesion to cardiocentrism cannot be rebuked as an exaggerated desire to please Aristotle (as Sobol claims). Neither can it be simply explained as a pure return to a supposed original Aristotelian account of the internal senses (as De Boer suggests). Buridan's solution cannot be reduced to a mere repetition of the standard view according to which the heart is the place were sensation takes place *subiective*, while the brain is considered the organ of the common sense just in a functional sense (a view which results from Knuuttila's account). Nor I can see (as Kärkkäinen does) that Buridan introduces the anatomical idea of passages connecting the brain to the heart with the aim of fixing a supposed contradiction between *his* view of identifying the brain as seat of the common sense and the Aristotelian view identifying the heart as the proper organ of common sensation. In q. 24, Buridan *never* identifies the brain as the organ of the common sense. Neither is the aim of Buridan's theory just to save the medical phenomena of lesions of the brain impairing common sense. This interpretation would reduce Buridan's account of the common sense to a mere attempt of harmonizing the philosophical and medical views without acknowledging his effort to offer a sophisticated and complete view of sensitive cognition. For the prelude to this footnote and the exact references to the texts of the scholars quoted above, see *supra* footnote 34.

3.3. The Roles of Male and Female in Human Reproduction

Sangue perfetto, che mai non si beve
Dall'assetate vene e si rimane
quasi alimento che di mensa leve,

prende nel core a tutte membra umane
virtute informativa, come quello
ch'a farsi quelle per le vene váne.

Ancor digesto, scende ov' è più bello
tacer che dire; e quindi poscia geme
sovr' altrui sangue in natural vasello.

Ivi s'accoglie l'uno e l'altro insieme,
l'un disposto a patire e l'altro a fare
per lo perfetto loco onde si preme;

e, giunto lui, comincia ad operare
coagulando prima, e poi avviva
ciò che per sua matera fé constare.

Dante Alighieri, *Commedia*, *Purgatorio* XXV, vv. 37–51

Issues of human generation were widely discussed in the Middle Ages: for many centuries, physicians, (natural) philosophers, and even theologians dealt with a set of various questions about generation inherited from the Ancient World. In the late Middle Ages, the complex relation between the two main traditions on human generation, the Galenic and the Aristotelian one, was complicated even more by the need of taking into account Avicenna's and Averroes' interpretations of those traditions. As a consequence, the accounts of human generation provided by late Medieval Latin authors came out as a complex set of different theses mostly combined and conciliated.[124] Given this combination of previous authorities and doctrines,

124 The topic of medieval theories of generation has been addressed many times. For general accounts of the theories of generation in late Middle Ages, see, among many other works, K. Park, 'Medicine and Natural Philosophy: Naturalistic Traditions', in: J. Bennett and R.M. Karras (eds), *The Oxford Handbook of Women and Gender in Medieval Europe*, Oxford University Press, Oxford 2013, 84–100; M. van der Lugt, *Le ver, le démon et la vierge. Les théories médièvales de la génération extraordinaire*, Les Belles Lettres, Paris 2004; R. Martorelli Vico, *Medicina e filosofia. Per una storia dell'embriologia medievale nel XIII e XIV secolo*, Guerini e Associati, Milano 2002; J. Cadden, *Meanings of Sex Difference in the Middle*

entirely original views about generation seem hard to find in Late Medieval texts. On the other hand, the fascinating aspect of those texts lies in their ways of allowing the interaction between the different traditions. In fact, the way in which each author allowed the various authorities and doctrines to interact reveals interesting elements of the author's approach to the relations and boundaries between disciplines, in particular theology, natural philosophy, and medicine.

In this section, I shall address Buridan's account of human generation, and particularly the issue of the roles of male and female in reproduction, which was one of the most intensely debated issues of the controversy between philosophers and physicians. This analysis allows us to shed light on the interaction between natural philosophical and medical authorities and doctrines on generation in Buridan's works on natural philosophy, and to grasp some elements of his conception of the relationship between natural philosophy and medicine.

Buridan offers his account of human generation in his questions on pseudo-Albertus Magnus' treatise *De secretis mulierum*.[125] Buridan's text mostly focuses on the topic of the roles of male and female in reproduction, more specifically on the question of how man and woman contribute to generation. Buridan's account of this topic is much more extensive and detailed than the one presented in the text he is commenting on. Where pseudo-Albertus' text roughly presents the roles of male and female in reproduction without details and consistent solutions, Buridan analyzes one by one the most important questions related to this issue.[126] In fact, he addresses and discusses in detail the following questions related to human generation:

Ages. Medicine, Science and Culture, Cambridge University Press, Cambridge 1993; G.R. Dunstan, *The Human Embryo. Aristotle and the Arabic and European Traditions*, University of Exeter Press, Exeter 1990; D. Jacquart and C. Thomasset, *Sexualité et savoir medical au Moyen Age*, Presses Universitaires de France, Paris 1985. Some reflections on sexuality in the Middle Ages are also available in T. Laqueur, *Making Sex: Body and Gender from the Greeks to Freud*, Harvard University Press, Cambridge (MA) 1990.

125 See *supra*, ch. 2 of this thesis.

126 For an edition of and an introduction to pseudo-Albertus Magnus' *De secretis mulierum*, see pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, in: *El* De secretis mulierum *atribuido a Alberto Magno*. cit.; see also pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, in: *Women's secrets: a Translation of pseudo-Albertus Magnus'* De secretis mulierum *with commentaries*, cit. These studies also provide elements on the reception of this treatise in the later Middle Ages and in the early modern period. In general, this text had a certain diffusion, as testified by the conspicuous number of manuscripts and early printed editions. The text was not included in the university *curriculum* but, as the case of Buridan testifies, it was read at the university level. Under both respects, the history of the diffusion and reception of the *De secretis mulierum* resembles to that of the *Physiognomica*.

1. *Utrum embryo generatur ex spermate viri et menstruo mulieris* (q. 3);
2. *Utrum post conceptionem sperma viri maneat in genito vel ingrediatur substantiam fetus* (q. 4);
3. *Utrum in conceptione fiat emissio seminis ex parte viri et femelle* (q. 5);
4. *Utrum menstruum sit superfluum alimenti ultimi* (q. 6);
5. *Utrum menstruum mulieris sit materia fetus* (q. 7).

3.3.1. *Buridan on Human Reproduction: Overview of the qq. 3–7 of the* Quaestiones de secretis mulierum

Let me start by giving an overview of questions 3–7 of Buridan's *Quaestiones de secretis mulierum*. The first question, titled *Utrum embryo generatur ex spermate viri et menstruo mulieris* (q. 3), is aimed at introducing the issue of the roles of male and female in reproduction. In this question Buridan explains that both male and female contributions are required in the process of generation. Referring to an initial passage of the *De secretis mulierum*, he describes how the embryo is generated, and claims that both male and female emit a generative substance: during intercourse, because of the pleasure caused by the rubbing of nervous corporeal members, both male and female emit a wet substance. This substance is called 'sperm' in the male, and '*menstruum*' in the female.[127] 'Conception' takes place when male and female seeds mix in the womb, which, after receiving the two seeds, closes. The composite of male sperm and female *menstruum* is called 'embryo'.[128]

---

127 Note that Buridan uses the term '*menstruum*' here to refer to the female contribution to generation, namely to the seed emitted by the female during intercourse. Elsewhere (in qq. 6 and 7), he explicitly makes the distinction between female seed and the menstrual flow. I will use the Latin word '*menstruum*' to maintain this ambiguity. The term '*menstruum*' was often used by late medieval authors writing after Avicenna to indicate not only the menstrual flow but also the female seed because, in Avicenna's account, the female sperm was described as a *humor dealbatus*, namely a more digested and whitened *menstruum*. See G.M. Nardi, *Problemi d'embriologia umana antica e medievale*, G.C. Sansoni Editore, Firenze 1938, 45.

128 'Secundo sciendum quod quando vir et femella sunt in coytu, tunc, propter delectacionem que propter confricacionem membrorum nervosorum causatur, ex ambobus exit quedam substancia humida, que in homine dicitur 'sperma' et in muliere 'menstruum'. Et post emissionem ad unum locum congregatur, scilicet matricem, que postea clauditur, ita quod acus non posset intrare. Et continue illud commixtum crescit et augmentatur et consolidatur per elapsum temporis. Et illam recepcionem seminum in matrice vocamus 'concepcio' vel 'concipere', ut patet *in textu*. Et illud compositum ex spermate viri et menstruo mulieris proprie vocatur 'embrio''. See E, q. 3, 13.

In this question, Buridan's objective is to present the main terminology related to the process of generation, and to state the necessity of both male and female contributions to the generation of the embryo.[129] A more detailed explanation of precisely how sperm and *menstruum* contribute to generation is given further on in the text, in the subsequent questions.

Buridan devotes the second part of the question to describing the disposition of the embryo, more specifically to the growth of the embryo from conception until the birth of the fetus. The embryo progressively grows, solidifies, and its corporeal members start forming. The birth of the fetus can take place from the seventh to the eleventh month of pregnancy.[130]

In the second question, titled *Utrum post conceptionem sperma viri maneat in genito vel ingrediatur substantiam fetus* (q. 4), Buridan discusses the role of male sperm in generation. More specifically, the problem here is whether after conception male sperm remains in the substance of the fetus. This issue was controversial because the philosophers traditionally claimed sperm is not a material component of the fetus and does not materially enter the fetus, whereas the physicians considered sperm to be a part of the fetus, materially entering its substance. As Joan Cadden argues, medieval authors paid less attention to this question than to the question of the female role in reproduction.[131] Nevertheless, it constitutes a central issue

129 The structure of the *quaestio* is as follows: (1) four arguments against the idea that the embryo is generated both from male sperm and female *menstruum*; (2) a first article devoted to arguments in favor of the idea that the embryo is generated both from male sperm and female *menstruum*. Besides some general remarks and arguments proving this point, the article contains two more specific parts in which Buridan proves *in speciali* the necessity of male sperm and female *menstruum* for generation; (3) a second article about the development of the fetus in the womb; (4) a part devoted to the answer to the initial arguments against the idea that the embryo is generated both from male sperm and female *menstruum*.

130 'Quantum ad secundum, scilicet de disposicione embrionis, est sciendum, ut dicunt autores, quod in sex primis diebus est eius disposicio ad modum et colorem lactis aliquantulum spissi et coagulati, ut dicitur in secundo *De generacione animalium*; et istum colorem generat calor naturalis in spermate viri dimissus et similiter calor matricis. Deinde in novem diebus per ulteriorem digestionem efficitur sanguis spissus. Postea in duodecim diebus fit consolidacio membrorum et incipiunt partes hominis generari. Hoc tempore toto transacto, incipit habere similitudinem hominis et disposicionem in decem et octo diebus. Et sic secundum aliquos sunt quadraginta quinque diebus. Quibus peractis, fetus disponitur et augmentatur usque ad septimum mense ad minus et undecimum ad maius, ut apparet in nono *De historiis animalium*; et tunc nascitur fetus. Sed qualiter nutriatur et membra formentur, et que primo, videtur post'. See E, q. 3 24.

131 See J. Cadden, *Meanings of Sex Difference in the Middle Ages. Medicine, Science and Culture*, cit., 127.

in the conceptual framework of the controversy between philosophers and physicians.[132] Buridan deals with it precisely as such. In fact, after having presented some arguments against the view that male sperm enters the substance of the fetus, he divides the *quaestio* into three main articles: the first devoted to the *opinio medicorum*, the second to the *opinio philosophorum*, and the third to the *concordia opinionum*.[133]

Buridan presents the respective opinions of the philosophers and the physicians as follows. The main premise of the physicians is that sperm, a warm and wet substance, is a residual part of the blood produced in the process of digestion. From this premise, the physicians (Buridan generally refers to the two main medical authorities of the Middle Ages: Galen and Avicenna) conclude that male sperm enters the substance of the fetus. Their argument runs as follows: the human body has thick and subtle parts; thick parts (such as bones and nerves) are generated by the *menstruum*, because *menstruum* (properly speaking sperm that has not been digested) is a cold and wet substance having an effect of consolidation and coagulation. On the other hand,

132 Actually, this problem was not as rarely addressed in late medieval texts as Cadden claims. We can find it in Peter of Spain's *De animalibus* within the issues *Utrum semen viri sit pars materialis ipsius concepti. De controversia inter philosophum qui dicit quod materia concepta venit a sola femina, et medicum qui dicit quod venit ab utroque* (see Peter of Spain, *Quaestiones super libro* De animalibus *Aristotelis*, ed. F. Navarro Sánchez, *Peter of Spain*, Quaestiones super libro *De animalibus* Aristotelis. *Critical Edition with Introduction*, Ashgate, Farnham, 2015, 382–384); in Albertus Magnus, who undoubtedly influenced later authors also on topics related to generation (see Albert the Great, *Quaestiones super* De animalibus, ed. E. Filthaut, Aschendorff, Münster 1955, bk XV, q. 20, 272–273); and in Giles of Rome, a theologian, whose work constitutes one of the most extensive treatments of the topic of generation in the late Latin Middle Ages (see Giles of Rome, *De formatione humani corporis in utero*, ed. R. Martorelli Vico, SISMEL Edizioni del Galluzzo, Firenze 2008, ch. VIII, 112–121). Furthermore, this problem was also addressed by many physicians, for example by Taddeo Alderotti (see Taddeo Alderotti, *Expositiones in arduum aphorismorum Ipocratis volume*, Venezia 1527, f. 358$^{ra–rb}$: *Utrum sperma viti sit pars concepti*); Dino del Garbo (see Dino del Garbo, *De natura fetus*, Venezia 1502, f. 50^{v}: *Quaeritur ergo utrum sperma masculi cedet in substantiam fetus*); Tommaso del Garbo (see Tommaso del Garbo, *De generatione embryonis*, Venezia 1502, f. 35^{r}–45^{r} and Tommaso del Garbo, *Summa medicinalis*, Venezia 1531, bk I, tr. V, q. LVII, f. 57^{vb}: *Utrum sperma viri subiiciatur per materia fetus*); and Iacopo da Forlì (Jacopo da Forlì, *Expositio supra capitulum* De generatione embrionis *cum questionibus eiusdem*, Venezia 1502, f. 2^{r}–17^{v}). Above all, we can find this issue treated in Peter of Abano, whose famous work, the *Conciliator*, represents the most elaborated exposition of topics pertaining to the controversy between philosophers and physicians (see Peter of Abano, *Conciliator*, Venezia 1565, diff. 36 *Utrum genitura, sive sperma viri, sit pars constitutive embrionis*, ff. 55ra–55^{vb}).

133 'In questione primo videndum est opinio medicorum, secundo philosophorum et precipue Aristotelis. Tertio de concordia istarum opinionum'. See E, q. 4, 11.

subtle parts (such as flesh and veins) are generated by male sperm, which is warm and wet and, as a consequence, has an effect of rarefaction; it therefore produces soft and not dense parts.[134]

According to the *opinio philosophorum*, male sperm does not remain in the fetus and does not enter the substance of the fetus. Male sperm just brings the formative virtue necessary for the coagulation of *menstruum* in the womb. In fact, only a liquid substance, such as sperm, can descend into the womb so as to act on the *menstruum*. Buridan mentions three arguments in favor of this conclusion: (1) the artisan does not enter the substance of the artifact, hence, by analogy, sperm does not enter the substance of the fetus; (2) nothing is made up of the motive and moved, hence sperm (the mover) does not enter the composition of the fetus (the moved); (3) animals without blood cannot emit any spermatic superfluity; if sperm were naturally present in the substance of fetus, these animals would have to emit some spermatic superfluity; but this contradicts the premise.[135] Therefore, Buridan

134 'Quantum ad primum supponendo primo, ut videbitur post, quod spermatis natura est calida et humida, ut dicitur in quarto *De generacione animalium*; et ideo dicitur in primo capitulo, sexto tractatu secundi quod sperma est superfluitas alimenti sanguinei. De quo dixerunt medici sicud Galienus et Avicenna ponendo conclusionem quod sperma viri ingreditur substanciam fetus. Quam probant sic: ex quo generantur partes subtiliores corporis illud ingreditur substanciam fetus; sperma viri est huiusmodi; igitur etc. Maior patet. Minor declaratur quia: secundum ipsos partes corporis sunt duplices, quedam grosse sicud ossa et nervi, alie subtiles sicut caro et vene. Modo secundum ipsos partes corporis grosse generantur ex menstruo mulieris; et racio est quia menstruum est frigidum et humidum, ut patet quarto *De generacione animalium*; et ideo dicitur *ibidem* quod menstruum est sperma indigestum; modo indigesta sunt frigida, ut patet quarto *Meteororum*, et frigidi est consolidare atque coagulare; ergo tales partes, cum indigeant forti consolidacione, generantur a menstruo. Sed partes subtiles generantur a spermate, quia spermatis natura calida est et humida, ut dicitur in quarto *De generacione animalium*; modo caliditatis est rarefacere et frigiditatis molescere; ideo partes que sunt rare et molles ex spermate generantur'. See E, q. 4, 12. This point of Buridan's account sounds strange. In fact, the current medical opinion, at that time seemed to be different: hard parts are spermatic *membra*, formed from both male and female sperm; soft part are sanguinary *membra*, formed solely from menstrual blood. See K. van 't Land, 'Sperm and Blood, Form and Food. Late Medieval Medical Notions of Male and Female in the Embryology of *Membra*' in: M. Horstmanshoff, H. King and C. Zittel (eds), *Blood, Sweat and Tears. The Changing Concepts of Physiology from Antiquity into Early Modern Europe*, Brill, Leiden 2012, 363–392.

135 'Quantum ad secundum est opinio philosophorum et precipue Aristotilis in primo *De generacione animalium* capitulo ultimo quod sperma viri non ingreditur substanciam fetus. Et illum modum quidam declarant: unde dicunt quod sanguis menstruosus matris maneat in fetu et ingrediatur eius substanciam. Sed sperma viri non, sed tantum est subiectum deferens virtutem formativam que agit in menstruum ipsum coagulando, quia alias talis virtus non posset descendere in matricem ut ageret in menstruum nisi in subiecto humido et liquido, quod dicitur sperma. Et illam conclusionem probat Aristotiles quia: artifex non ingreditur substanciam artificii; ergo sperma viri non ingreditur

concludes, according to the philosophers, sperm is not the matter of the fetus; it just acts as the motive force of generation. After having educed the form of the fetus from the potency of matter with the assistance of the heavenly bodies, sperm evaporates thanks to the virtue of the sun.[136]

Having presented the views of the physicians and the philosophers on the presence of male sperm in the fetus, Buridan devotes a long part of his text to an attempt of making the two opinions compatible. To solve the controversy, Buridan introduces two meanings of the word 'sperm': (1) in a material sense (*materialiter*) the term 'sperm' refers to a superfluity originating from the process of nourishment and emitted during the intercourse; but in another sense (2) the term 'sperm' designates the formative power (*virtus formativa*) sperm potentially contains.[137] On the basis of this distinction, Buridan makes the following two claims. First, he states that sperm taken in the first sense enters the substance of the fetus. To prove this claim he refers, first of all, to the arguments in favor of the *opinio medicorum*.[138] In addition, Buridan offers the following argument: because of the closure of the womb, sperm cannot evaporate; hence, given that sperm does not evaporate, it must enter the substance of the fetus. To this argument Buridan adds that, if someone argues that this opinion contradicts Aristotle's view, it can be answered that Aristotle considers sperm in the second sense (i.e. sperm as formative power).[139] Buridan's second claim is that sperm conceived in

---

substanciam fetus. Tenet consequencia, quia sperma viri respectu fetus habet se sicut artifex respectu sui artificii. Antecedens patet, quia carpentarius non ingreditur substanciam domus, ut dicitur *loco preallegato*. Et confirmatur racione Philosophi *capitulo predicto*: nichil componitur ex movente et moto tamquam ex materia ipsum constituente; igitur nullus homo componitur ex spermate. Tenet consequencia, quia masculus secundum quod masculus est movens, scilicet per suum sperma; sed femina est passum et motum per suum menstruum, ut dicitur *ibidem*; igitur ista duo non simul manent in fetu. Antecedens patet, quia lectus non componitur ex carpentario et ligno. Tercio confirmatur ex animalibus exanguibus quia: tunc sequeretur quod talia animalia emicterent aliquam superfluitatem spermaticam que fetui naturaliter inexisteret; quod est falsum, quia carent tali materia. Tenet consequencia, quia non videretur quid ex parte masculi materialiter maneret in fetu'. See E, q. 4, 13.

136 'Et ideo propter istam opinionem est notandum quot modis ponendi est quod sperma habet quamdam virtutem activam et effectivam respectu fetus. Et ideo postquam sperma eduxit formam fetus una cum corporibus celestibus de potencia materie, tunc sperma viri exalatur virtute solis de matrice mulieris sicud vapor de terra vel aqua exalaret'. See E, q. 4, 14.

137 'Quantum ad tercium, scilicet propter concordiam istarum opinionum, est sciendum quod 'sperma viri' accipitur dupliciter: uno modo pro superfluo alimenti quod emictitur in coytu, secundo modo pro virtute formativa sibi inexistente in potencia'. See E, q. 4, 16. Buridan uses the word 'materialiter' in two passages below this first one. See *infra*, footnote 139 and 141.

138 See *supra* 102–103.

139 'Tunc est prima conclusio quod sperma primo modo acceptum ingreditur substanciam fetus.

the second sense does not enter the substance of the fetus. To prove this claim he not only refers to the arguments in favor the *opinio philosophorum*,[140] but also presents the following argument: if sperm entered the substance of the fetus, then the material cause and the efficient cause would coincide. The male, in fact, plays the role of the efficient cause whereas the female provides matter. With respect to this argument Buridan makes a similar remark as previously regarding his first claim: if someone argues that this opinion contradicts the view of the physicians, it can be answered that physicians consider sperm in the first (material) sense.[141]

Buridan thus solves the *quaestio* through a conceptual distinction based on the ontological difference between matter and formative power. He takes one and the same entity, male sperm, and underlines that it can be conceived in two ways (*accipitur dupliciter*): (a) as the residual substance of the process of nutrition, and (b) as the formative power, which is in potency present in the sperm. Sperm, as a material entity, enters the matter of the fetus, while the formative power potentially present in the sperm does not.

In some respects, this solution seems to differ from some other authors' solutions to the same problem. Buridan distinguishes between two understandings of the same object (male sperm): 'sperm as a material entity' and 'sperm as the formative power potentially present in it'. These understandings are ultimately based on the

---

Probatur racione medicorum prius facta. Secundo: sperma sic acceptum aut exalatur virtute solis aut ingreditur substanciam fetus; sed non exalatur; igitur ingreditur substanciam fetus. Maior patet sufficienti divisione. Minor declaratur quia: si fieret exalacio, tunc fieret penetracio dimensionum, quod est falsum. Et tenet consequencia, quia, ut patet in *textu*, post generacionem embrionis matrix undique clauditur, et quia sperma est corpus, ideo, si exalaretur, corpus spermatis penetraret corpus matricis. Et si diceretur quod conclusio est contra Philosophum primo *De generacione animalium*, dicitur quod ipsa cepit sperma pro virtute formativa et non pro spermate materialiter accepto, scilicet pro superfluo emisso in actu coytus'. See E, q. 4, 17–19.

140 See *supra* 103–104.

141 'Et ideo est conclusio secunda quod sperma secundo modo acceptum pro virtute formativa non ingreditur substanciam fetus. Probatur racionibus Philosophi ut prius. Secundo: si sic, sequeretur quod materia et efficiens coinciderent; quod est falsum, ut patet in secundo *Phisicorum*. Consequencia tenet, quia sperma illo modo acceptum est causa efficiens fetus. Et ideo dicitur primo *De generacione animalium* quod masculus confert generato principium motus, femella autem materiam. Et si dicatur: hoc est contra medicos – dicitur quod medici intelligunt de spermate primo modo capto scilicet pro superfluo alimenti'. See E, q. 4, 20. The final part of the *quaestio*, devoted to the answer to the initial arguments, is based on the same idea: the two senses/functions of 'sperm' must be distinct in order to show the concordance between the two opinions. See the following example: 'Ad sextam: negatur consequencia accipiendo 'sperma' formaliter, sed materialiter bene conceditur. Ad probacionem: dicitur quod disposicio talis menstrui sufficit fetui ut virtute formativa spermatis continue disponitur'. See E, q. 4, 32.

ontological distinction between the matter of the sperm (destined to contribute to the fetus' corporeal constitution) and its formative virtue (i.e., the '*virtus formativa*' providing the embryo with the possibility of acquiring a form[142]). On the other hand, several other authors, both philosophers and physicians, seem to distinguish between two components of the same object (male sperm), one of which, being more thick, can provide a material contribution to some corporeal parts of the embryo, while the other, being more foamy and a bearer of the formative power, does not materially enter the embryo.

The distinction between a thick and a foamy part of the sperm used to solve the question of whether the sperm enters the substance of the fetus is found in Albert the Great's *Quaestiones de animalibus*. Here, Albert, who searches to reconcile the Aristotelian and the Galenic position, speaks about *humiditas*, representing the thick part of the sperm, and a *spiritus spumosus*, transmitting the virtue of the father's soul:

> Videtur tamen esse mihi dicendum, quod in spermate duo sunt, scilicet humiditas vel superfluitas ultimi cibi et virtus animae patris in quodam spiritu spumoso existens. Unde quantum ad humiditatem potest sperma esse pars concepti sicut menstruum, quantum tamen ad ipsum spiritum non, quia ipsa humiditas primo commiscetur cum menstruo, sicut vinum cum aqua vel coagulum cum lacte. Constat autem coagulum esse partem casei et aquam vini …

And then:

> Nihil tamen prohibet aliquam partem eius materialem cedere in materiam vel corpus concepti, ex quo commiscetur cum menstruo, et sic intelligunt medici. Et forte ex illo generantur membra principalia et radicalia, ex menstruo fluentia membra.[143]

---

142 The notion of '*virtus formativa*' played a central role in medieval debates on human generation. It was particurarly involved in the issue on the animation of the embryo. See M. Van der Lugt, 'L'animation de l'embryon humain et le statut de l'enfant à naître dans la pensée médiévale', in: L. Brisson, M.-H. Congourdeau and J.-L. Solère (eds), *L'animation de l'embryon humain et le statut de l'enfant à naître dans la pensée médiévale*, Vrin, Paris 2004, 234–254, esp. 243–250. Buridan does not develop or further define this notion. Neither does he deal with the topic of the animation of the embryo in his commentary on the *De secretis mulierum*. See *infra*, footnote 178.

143 See Albert the Great, *Quaestiones super* De animalibus, ed. E. Filthaut, Aschendorff, Münster 1955,

Likewise Tommaso del Garbo, who clearly supports a Galenic position, distinguishes between a *pars spumosa* and a *pars grossa* of the sperm:

> … in spermate, ut supra dictum est, sunt due partes. Una spumosa, que est spiritus gignitivus; in hac parte est virtus fetus effectiva et illa non subiicitur pro materia fetus nec aliquid fetus ex illa materialiter generatur, licet iam quidam dixerunt quod ipsa convertitur in spiritum fetus. Alia est pars grossa, viscosa, alba, et illa est illa que convertitur in generatione fetus et subiicitur illi pro materia, cum ipsa sit immediate ex sanguine facta laudabili ex quo fetus immediate generari debet cum eadem sit materia generationis et nutricationis …[144]

In Peter of Abano we do not find a clear distinction between the two parts. His attempt of reconciliation is based on a passage from Avicenna aimed at showing that Aristotle did not deny the material contribution of the male sperm to the embryo. The sperm, Peter of Abano writes, is involved in the material constitution of the embryo so that it can make the corporeal members functioning and provide a suitable matter to them:

> Et putant homines quod Aristotiles putaverit quod sperma viri non esset pars pueri, neque immistum cum materia eius. Sed hoc non fuit eius consilium, sed suum extat consilium quod involvatur cum materia ipsius, et profundetur in materiam ut sit operator membrorum et ducat idoneam materiam ad membra, et erit id sperma materia spiritus in creatura, et efficitur multum subtile et habile ut in spiritum transeat.[145]

Nevertheless, maybe on the basis of the following passage of the same *differentia*, titled 'Itaque genitura constitutionem ingreditur embryonis, non mole neque vigore

---

bk XV, q. 20, 272–273. See M. de Asúa, 'War and Peace. Medicine and Natural Philosophy in Albert the Great', cit., esp. 289.

144 See Tommaso del Garbo, *Summa medicinalis*, Venezia 1531, bk I, tr. V, q. LVII, f. 57^{vb}.

145 See Peter of Abano, *Conciliator*, Venezia 1565, f. 55va. For Avicenna's passage, see Avicenna, *De animalibus*, Venezia 1508, repr. Frankfurt am Main 1961, IX, 1, f. 41^{r}. On this point, see R. Martorelli Vico, 'Tra medicina e filosofia: il *Conciliator* di Pietro d'Abano sulla dottrina aristotelica della generazione', in: C. Crisciani, R. Lambertini and R. Martorelli Vico (eds), *Parva naturalia. Saperi medievali, natura e vita. Atti dell'XI Convegno della Società Italiana per lo Studio del Pensiero Medievale, (Macerata, 7–9 dicembre 2001)*, Istituti Editoriali e Poligrafici Internazionali, Roma-Pisa 2004, 73–81.

solum, vero et spermate in spiritus resoluto, qui modus fere obtinet medium',[146] Iacopo da Forlì ascribes the following position to Peter of Abano: male sperm enters the substance of the fetus as an active principle both with its thick part and its foamy part; the thick part does not contribute to generation only by transporting the generative spirit, but also because it is itself transformed into spirit; neither is this thick part expulsed or does it evaporate:

> Quinta conclusio posita a *Conciliatore*, differentia 36, sperma viri tam quoad partem eius corpulentam quam spumosam tamquam principium effectivum constitucionem embrionis ingreditur. Et videtur per hanc conclusionem *Conciliator* intelligere quod pars corpulenta spermatis viri non solum concurrit ad generationem tamquam vehiculum spiritus gignitivi ipsum conservans et deferens ad locum generationis, sed eciam ipsamet corpulenta pars per accionem spiritus gingnitivi in ipsam in spiritum transmutetur, quia effective concurrit ad membrorum generacionem et formacionem sicut spiritus gingnitivus in spermate primo inclusu, neque resolvitur pars spermatis corpulenta et eicitur vel evanescit, sicut plurimi putaverunt.[147]

Taddeo Alderotti does not seem to search a concordance between the Aristotelian and the Galenic position on this point (as for example Albert the Great does), and clearly expresses an Aristotelian position:

> Ad hoc dico quod sperma viri est pars concepti, tamen non est pars materialis sed formalis et per modum cuiusdam efficientis sicut coagulum in caseo non est pars materialis sed formalis et per modum cuiusdam efficientis.

Nevertheless, as Cadden rightly observes,[148] Taddeo also introduces a parenthesis in which it seems that he expresses the possibility that sperm enters the substance of the fetus:

---

146 See Peter of Abano, *Conciliator*, Venezia 1565, f. 55^{vb}.

147 The text belongs to the *quaestio Utrum sperma mulieris effective concurrat ad generationem*, in Iacopo da Forlì's commentary on the second part of Galen's *Tegni*; it has been transcribed by R. Martorelli Vico from the ms. Milano, Biblioteca Nazionale Braidense, AE XI 23, ff. 1^{r}–189^{r} and appears in R. Martorelli Vico, *Medicina e filosofia. Per una storia dell'embriologia medievale nel* XIII *e* XIV *secolo*, Guerini e Associati, Milano 2002, 143–195. The quoted passage is at p. 171.

148 See J. Cadden, *Meanings of Sex Difference in the Middle Ages. Medicine, Science and Culture*, cit., 128.

> Natura efficit continuationem partium aut dicitur (?) quod in spermate viri considerantur duo: unum est natura corporea, et quantum ad hoc est pars ⟨concepti⟩; et consideratur pars (*potius* natura CB) incorporea, scilicet ipsa virtus que est in eo, et quantum ad hoc est solum efficiens.[149]

It is not entirely clear whether Taddeo is distinguishing between two *senses* of 'sperm' (a material sense and an incorporeal sense, i.e., a sense in which sperm is considered from the viewpoint of its 'corporeal nature' and a sense in which sperm is conceived from the point of view of its 'incorporeal nature') or between two *parts* of sperm (a material and an incorporeal one). In the first case, the case in which we propose to correct 'pars' with 'natura', Taddeo's parenthetical sentence would be the closest statement to Buridan's solution I have been able to find.

Both Buridan's solution and that of other authors involve the ontological pair 'matter' and 'form', i.e., the coexistence of a material and a formal aspect of sperm. Nevertheless, Buridan's solution is framed into a conceptual-logical explanation, while the other authors choose an explanation based on the biological nature of sperm and on a physical distinction between parts of the sperm. In the case of Buridan, the possible *conceptual meanings* of the *term* 'sperm' account for the solution of the issue. On the other hand, the other authors mentioned approach the issue by means of a *biological distinction* between different *parts* of the sperm.

In conclusion, Buridan uses the instruments of logic to reach his ultimate aims: (1) to harmonize the views of the physicians and the philosophers (the *opinio medicorum* is compatible with the *opinio philosophorum* if the proper distinctions are made), and (2) to admit, on the side of the medical tradition, that sperm enters the substance of the fetus. In fact, the solution of the issue he is endorsing here makes the idea acceptable that sperm provides a material contribution to the fetus, as well as a formal contribution.

Buridan's third question, titled *Utrum in conceptione fiat emissio seminis ex parte viri et femellae* (q. 5), is linked to the question on the contributions of male and female to generation (q. 3). This question asks whether during the conception there is an emission of seed by both the male and the female. Nevertheless, q. 5 is not a mere repetition of q. 3. In fact, in q. 3 Buridan outlines the general terminology related to

149 See Taddeo Alderotti, *Expositiones in arduum aphorismorum Ipocratis volume*, Venezia 1527, f. 358$^{ra–rb}$.

human generation, arguing that male and female contributions are necessary for the generation of the embryo. On the other hand, in q. 5, he wants to underline that both male and female contributions to generation, more precisely the male and female substances emitted during intercourse, can properly be called generative 'seeds'. Even though in the formulation of the *quaestio* Buridan asks whether male and female emit seed, his principal aim is to investigate whether or not the female emits a generative seed.

The question concerning the female contribution to generation (does a female emit a generative seed?) was a central issue of the medieval debates on generation. Again, this issue was discussed against the background of the controversy between philosophers and physicians. The philosophical tradition, based on Aristotle, denied the female contribution to generation: the female role in conception is only passive, and females do not emit a generative seed; females only contribute to generation by the menstrual flow, which provides matter and nourishment to the fetus.[150] On the other hand, the medical tradition, on the basis of Galenic texts, supported the idea that also females emit a generative seed, distinct from the menstrual flow, which plays a certain active role in generation (although it remains completely inactive without the action of the male sperm).[151]

Usually, and mostly because of Avicenna's attempt of reconciliation between the two traditions, late medieval authors did not clearly choose one side instead of the other, but followed Avicenna's willingness of concordance. It is true, as Joan Cadden claims, that among both philosophers and physicians a straightforward defense of the Galenic position was rare: authors were mostly inclined at saving the Aristotelian position.[152] In general, late medieval authors' accounts of this topic were rich of shades and misunderstandings, and their positions can be best described in terms of a range closer to or more distant from the two extreme views, the Aristotelian and the Galenic. In this complex framework, it is important to see how Buridan sides with a certain version of the Galenic two-seeds-theory, harmonized with the Aristotelian point of view.

Buridan starts his discussion with a set of arguments against the idea that females emit a generative seed. Obviously, these arguments are all inspired by Aristotelian

150 See A. Preus, 'Science and Philosophy in Aristotle's *Generation of Animals*', *Journal of the History of Biology*, 3, 1 (1970), 1–52.

151 See A. Preus, 'Galen's Criticism of Aristotle's Conception Theory', *Journal of the History of Biology*, 10, 1 (1997), 65–85.

152 See J. Cadden, *Meanings of Sex Difference in the Middle Ages. Medicine, Science and Culture*, cit., 117–121.

texts.[153] Then, he turns to analyze the position he wants to support: the female emits a generative seed. Interestingly, Buridan refers to the authority of Aristotle[154] also in this part, using Aristotelian arguments to bolster the Galenic position. As a result, Buridan's analysis turns out to be relatively superficial and certainly not based on a detailed natural philosophical and medical inquiry. Nevertheless, his message is clear: both male and female emit sperm.[155]

Having established this position Buridan has to deal with some issues closely connected to it: which is the mode of emission and reception of generative seeds? What distinguishes the female seed from the female menstrual flow? Which are the proper roles of the female seed and of the menstrual flow? The remaining part of q. 5 (in particular, the second article) is devoted to the first of these issues,[156] while the other two are treated in qq. *6* and *7* respectively.

---

153 'Primo quia: dicitur primo D*e generacione animalium*: 'accidit mulierem concipere sine delectacione'; modo semen nunquam emictitur, ut videtur, nisi causetur delectacio; ergo a destructione consequentis, si non causatur delectacio, non emictitur semen. Secundo: ubicumque est agens sufficiens et materia, ibi potest esse passum et generatum; sed in spermate solo est agens sufficiens et materia; ergo sine menstruo potest fieri concepcio. Maior patet secundo P*hisicorum*: 'causa et effectus simul sunt et non sunt'. Minor patet, quia, ut patet secundo D*e generacione animalium*, in spermate sunt calor solis et animalis, et similiter virtus sensitiva et nutritiva; modo ista sunt sufficiens agens ad generacionem. Similiter sperma est causa materialis, ut videtur. Tercio: ut patet primo et secundo P*hisicorum*, materia et forma non separantur secundum esse sed tantum secundum racionem; modo sicut dictum est prius, in spermate est materia sufficiens et forma ad generacionem; ergo sine emissione menstrui potest fieri concepcio. Quarto: si sic, sequeretur quod ex duobus in actu fieret tercium, quod est falsum. Tenet consequencia, quia utrumque, scilicet masculus et femella, est ens in actu, cum quodlibet sit compositum ex materia et forma'. See E, q. 5, 3–6.

154 Buridan refers to the H*istoria animalium* and the D*e generatione animalium*. See E, q. 5, *7* and 10–16.

155 'Et ideo pro nunc est conclusio quod in concepcione necessario requiritur emissio seminis ex parte maris et femelle vel simultanie, id est in eodem tempore, vel successive'. See E, q. 5, 12. 'Secundo sequeretur quod masculus et femella non essent principium generacionis; quod est falsum, ut ⟨patet⟩ primo D*e generacione animalium*, capitulo primo. Tenet consequencia, quia, ut patuit *ibidem*, propter hoc masculus et femella sunt principium generacionis, quia sperma ab ambobus segregatur'. See E, q. 5, 14. Note that, in the *ad rationes* part of q. 3, Buridan has introduced *en passant* an usual medieval vocabulary clarification concerning the term 'sperm' to indicate also female seed. Female seed is called 'sperm' *large*, namely in a large sense, because only the male seed can be called 'sperm' *stricto sensu*. The initial argument was: 'Primo: hoc maxime esset propter mixtionem spermatis cum spermate. Consequens est falsum per Aristotilem primo D*e generacione animalium* dicentem: 'fetus non generatur ex permixtione duorum spermatum'. Tenet consequencia, quia dicit *autor* quod ex semine maris et femelle fiat unum'. See E, q. 3, 3. Buridan's answer was: 'Ad primam: conceditur consequencia. Ad probacionem falsitatis consequencie: dicitur quod ibi accipitur 'sperma' large'. See E, q. 3, *26*.

156 'Quantum ad secundum, scilicet de modo emissionis et recepcionis, est sciendum quod …'. See E, q. 5, 18.

Concerning the mode of emission and reception of seeds, Buridan presents two opinions. According to the first one, not specifically ascribed to any author or group ('dicunt aliqui …'), the female emits her seed first. This is derived from experience, because during intercourse the male perceives some humidity before emitting his own seed. After the emission, male sperm attracts female seed. They form a unity (*unum*) that is attracted by the womb and that is called 'embryo'.[157] According to the second opinion, first, the male sperm is emitted in the vulva, the womb becomes hotter, attracts male sperm, and then closes; second, after this closure, the female emits her seed that is attracted by the womb thanks to the virtue of male sperm. This second option, Buridan states, seems more plausible than the first one. He seems to be persuaded by the famous anecdote (transmitted in Averroes' *Colliget*) of the conception in the baths: a virgin in the water got pregnant by attracting the male sperm previously emitted by a man bathing in the same water.[158] Buridan also enters into the details of the second position and underlines again, referring to Aristotelian authority, that conception takes place when the womb, having reached the right temperature, attracts male seed. This seed was previously emitted by the male and

157 '… dicunt aliqui quod aliquando, propter nimiam delectacionem vel libidinem in feminis, accidit ipsas prius emictere semen. Et hoc eciam concordat experigencie, quia aliquando, quando vir est in coytu cum muliere, antequam proprium semen emictat, sentit suum membrum aliqualiter esse humidum; et huius signum est quod mulier prius emisit quam ipse. Et ideo dicitur secundo D*e generacione animalium* in antiqua translacione quod forte accidit delectacio marium et femellarum equaliter, et forte non. Et postea emictitur sperma viri, quod est calidum et siccum. Et dicunt aliqui quod propter hoc actrahit semen femelle, et sic ex istis duobus fit unum, et actrahitur a matrice, quod dicitur embrio'. See E, q. 5 18.

158 'Secundus modus emissionis est quod aliquando, propter nimiam activitatem spermatis viri emissi prius in vulvam, matrix supercalefit et actrahit sperma et postea clauditur, et ex tali clausione calidum in tantum agit quod mulier postea emictit semen, sicud sepe patet in sompniis. Et istud semen emissum matrix actrahit virtute spermatis. Et istud videtur verisimile, quia, ut recitat Averrois in suo *Colliget*, semel accidebat virum balneari qui pre nimia libidine, semine deciso ab alveo, recessit, et quia virtus illius seminis fuit magna propter bonam digestionem, quedam virgo subintravit et actrahendo illud semen per os matricis, fuit impregnata'. See E, q. 5, 18–19. Averroes' text in the *Colliget* is the following: 'Et vicina quaedam mea, de cuius sacramento confidere multum bene poteramus, iuravit in anima sua quod impregnata fuerat subito in balneo lavelli aque calide in quo spermatizaverunt mali homines, cum essent balneati in illo balneo. Et ego perscrutatus fui unum librum, quem fecit Avemcladis de spermate et inveni eum, qui dicit quod hoc possibile est esse et reddit de hoc rationem plurimum mihi placentem quia vulva trahit sperma propter unam propriam virtutem, quam habet cum eo a tota specie et ad hoc non est necesessaria delectatio'. See Averroes, *Colliget*, Venezia 1574, II.10, f. 22^{vb}. For the sources and reception of this anecdote, see M. van der Lugt, *La ver, le démon et la vierge. Les théories médièvales de la génération extraordinaire*, Les Belles Lettres, Paris 2004, 99–106.

remained out of the womb for a certain time before the womb reached the right temperature. This attraction of sperm, Buridan underlines, is not properly speaking due to the power of the womb, but to its heat.[159]

Buridan's final two questions, titled *Utrum menstruum sit superfluum alimenti ultimi* (q. 6) and *Utrum menstruum mulieris sit materia fetus* (q. 7), are devoted to a detailed description of female aspects of the theory of generation: the female seed and the menstrual flow. In these questions, Buridan deals with the remaining two issues that

159 'Tunc in speciali secundum Aristotilem de modo emissionis et recepcionis seminum manifestatur in secundo *De generacione animalium*, supponendo quod quelibet superfluitas movetur ad locum suum proprium, sicud sperma movetur ad testiculos et ad virgam. Et ideo dicitur in *libro predicto* in antiqua translacione: 'femina non impregnatur proprie nisi quando locus fuerit aptus ad motum et matrix descendit ad inferius et mas non eicit semen inter matrices, sicut opinantur quidam homines.' Et causa redditur *ibidem* quoniam: orificium matricis est strictum, sed eicit ipsum extra orificium, sicud eiciunt femine quendam cibum qui exit ab eis; unde remanet illic semen tempore; et cum mater fuerit temperata, actrahit illud semen ab interius, et non actrahit ex eo nisi modicum, et deicit illud, scilicet residuum, quasi multum malum. Et ideo dicitur *in eodem libro* in nova translacione: 'trahit autem genituram, id est semen, locus, scilicet matricis, propter caliditatem inexistentem matrici.' Et sequitur: 'et menstruorum segregacio est, scilicet a veneris, et congregacio ad matricem incendit caliditatem in particula hac.' Et ideo dicitur in decimo *De historiis*: 'emictunt autem non in se ipsis matrices, sed extra, ubi et vir, deinde trahunt in se ipsas.' Et ideo patet quod non fit attractio spermatis a matrice a tota specie matricis, ut dixit quidam in libro suo *De spermate*, sed per calidum, ut dictum est'. See E, q. 5, 20. Buridan is here criticizing the passage of Averroes he previously mentioned. See *supra*, 112. In fact, Buridan agrees with Averroes concerning the modality of emission and reception of seed, and is convinced by Averroes' examples of the virgin in the bath. Nevertheless, he is not as convinced as Averroes on the reason why the womb attracts the seed. According to Averroes, who refers to and agrees with 'unum librum, quem fecit Avemcladis (this author is unknown to us CB) de spermate', this attraction is due to a proper virtue of the womb, possesed *a tota specie* (on this attractive virtue of the womb as expressed by Averroes, see M.A. Hewson, *Giles of Rome and the Theory of Conception, a Study of the* De formatione corporis humani in utero, The Athlone Press, London 1975, 87–88). On the contrary, according to Buridan, the womb attracts the sperm thanks to the heat, namely due to the adequate temperature reached by the womb itself. So, Buridan disagrees with the idea according to which the attraction occurs thanks to an inner and unknown quality of the womb ('... ideo patet quod non fit attractio spermatis a matrice a tota specie matricis ...'). Note that Buridan is likely using here the term '*a tota specie*' because it is in Averroes' text. Yet, the concept of '*a tota specie*' was central in the late medieval medical theory and practice, especially in Paris. In general, the notion of '*tota specie*' was used to indicate some inner, occult virtue of something (e.g. of some medicines) not ascribable to known qualities of a substance. On the concept of '*tota specie*' in the medical framework, see D. Jacquart, 'Medical Practice in Paris in the First Half of the Fourteenth Century', in L.G. Ballester, R. French, J. Arrizabalaga, A. Cunningham (eds), *Practical Medicine from Salerno to the Black Death*, Cambridge University Press, Cambridge 1994, 186–210, esp. 196; N.G. Siraisi, *Medieval and Early Renaissance Medicine: an Itroduction to Knowledge and Practice*, The University of Chicago Press, Chicago, 1990, 145–146.

follow from his view concerning the existence of a female generative contribution to generation: what distinguishes the female seed from the female menstrual flow? Which are the proper roles of the female seed and of the menstrual flow?

In order to solve these issues, Buridan first deals with the topic of the formation of the female seed, a subject that helps him in determining both the analogies between female seed and male seed, and the differences between female seed and female monthly flow. In the previous questions, Buridan used the term '*menstruum*' to indicate both the female seed and the menstrual flow, although he clearly had in mind the difference. At this point of his text, in q. 6, Buridan makes explicit the terminological distinction between '*menstruum*' as the seed a woman emits during intercourse, and '*menstruum*' as the substance women monthly emit. He further elaborates on this distinction in q. 7. As his point of departure, Buridan describes how the *menstruum* (conceived as the seed emitted during intercourse) comes out from the process of digestion.[160] To this effect, he reports the description of the process of digestion found in the medical treatise *De urinis* by Isaac Israeli.[161] According to this work, Buridan argues, there are three digestions taking place in a human being.[162] The first digestion occurs in the stomach: the stomach assumes nourishment in the necessary quantity. Then, it sends the residual part to the mesenteric veins (*ad venas miseraycas*); the impure part of this *residuum* is transformed into excrement through the intestines. The second digestion takes place in the liver, which attracts the nutriment from the mesenteric veins and sends it to its own veins. In the liver, this nutriment is digested and transformed into blood, while the superfluous part is expulsed as urine. Blood is cleaned from humors: *colera nigra* is attracted by the spleen, *colera rubea* by the sun, and *flegma* by the lungs, where it becomes cooler and does not perform any nutritive function. After this purification, blood is sent to the heart. The heart takes the best part of the blood for its own nourishment and sends the residual part to the seminal vessels. In these vessels, through another digestion, because of the heat of the testicles,[163] blood is more cooked and whitened: generative seed takes its origin exactly

160 'Tunc de modo generacionis menstruorum, et principaliter illius quod mulier emictit in coytu …'. See E, q. 6, 15.

161 On the late medieval reception of Isaac Israeli, see D. Jacquart, 'La place d'Isaac Israeli dans la médecine médiévale', *Vesalius*, 4 (1998) 19–27.

162 '… tres sunt digestiones in homine, ut dicit Ysaac in libro *De urinis* …' See E, q. 5, 15. For Isaac Israeli's text, see Isaac Israeli, *Liber urinarum* in *Opera Omnia*, Lyon 1515, ff. 156–203. The three digestions are described at f. 158^{v}.

163 The use of the word 'testicles' here should not be surprising. In the Galenic tradition, the word 'testes' applied to both male and female body. It is famous the analogy between the male and the

from this final stage of digestion. At this point, Buridan underlines that according to some ('*aliqui*') the third digestion takes place in the heart; on the other hand, others (namely the physicians) consider the third phase of digestion to be linked to the production of the generative seed from the superfluity of blood. Whatever the case, female seed (just as male seed) is produced during the third and last stage of the digestion process and represents a superfluity of blood of which the original matter is food. Female seed is more digested than monthly flow.[164]

Therefore, in q. *6*, Buridan first elaborates on the origin of the female seed: it comes from the process of digestion and constitutes a residual substance produced during the last stage of digestion. Second, he emphasizes the parallelism between the female seed and the male sperm: they originate from the same physiological process. Third, he underlines a difference between the female seed and the menstrual flow: the former is more digested than the latter.

Finally, having determined the origin of the female seed, Buridan directly discusses (in q. *7*) the role of that seed, and, consequently, the difference between the female seed and the menstrual flow. His point of departure is the question whether the *menstruum* is the matter of the fetus. He first presents some arguments to the effect that the *menstruum* is not the matter of the fetus, maintaining the ambiguity of the term. In order to solve the *quaestio*, he clarifies the two senses of '*menstruum*'. *Menstruum* is twofold: (1) it is a digested substance emitted during intercourse; and (2) it is an undigested substance that flows monthly (in this sense, Buridan underlines,

---

female procreative apparatus Galen elaborated in the *De semine*. See Galen, *De semine*, II.1, ll. 1–4, p. 145, CMG V 3,1, ed. and transl. by P. De Lacy, Akademie, Berlin 1992.

164 '... Prima fit in stomacho, que digestio est cibi et potus. Et purum assumit sibi stomachus in nutrimentum quantum sibi sufficit, et residuum mictitur ad venas miseraycas, sed impurum, scilicet feces, expellitur per intestina. Secunda digestio est in epate, quod actrahit sibi nutrimentum a venis miseraycis, et illud mictit suis venis et ibi digeritur, quo digesto de utili partem sibi convenientem actrahit et sanguinem generat et superfluum mandat expulsioni urine; et postea sanguis mundificatur a colera nigra, quam actrahit splen, et a colera rubea, quam actrahit sol, et a fleummate, quod actrahitur a pulmone ut inde infrigidetur, sed non nutriatur; et sanguis sic mundificatus mictitur ad cor et de illo capit quantum sibi sufficit et partem meliorem sanguinis et residuam partem transmictit ad vasa seminalia et ibi racione caliditatis testiculorum per ulteriorem digestionem et dealbacionem decoquitur et generatur semen, ex quo fit fetus. Et dicunt aliqui quod illa digestio in corde sit tercia. Alii dicunt, sicut medici, quod tercia digestio est que fit ex superfluo sanguinis illo modo qui statim dictus est. Et consimiliter diceretur de spermate, cum de illo quod mulier emictit in qualibet mense diceretur quod illud est magis indigestum quam quod emictit in coytu. Et ideo dicitur in quarto *huius* quod menstrua sunt sperma indigestum et causatur a maiori frigiditate'. See E, q. *6*, 15.

the origin of the word '*menstruum*' from '*mensis*' – 'month' – is clear).[165] Against the background of this premise, Buridan makes two claims. First he claims that *menstruum* in the sense of a digested substance emitted during intercourse constitutes the matter of the fetus. His argument in favor of this claim runs as follows: only the *menstruum* in this sense is emitted by the woman during intercourse and causes pleasure; and the substance effectively emitted during intercourse is the matter of the fetus.[166] Second Buridan claims that *menstruum* in the sense of an undigested substance that flows monthly does not constitute the matter of the fetus, because this *menstruum* is not emitted during the conception of the embryo; on the contrary, the conception takes place after this *menstruum* is removed from the woman. Moreover, this *menstruum* provokes nothing but pain, and it is not disposed at the reception of the form of the fetus. At this point, Buridan presents a counterargument: if the conception takes place during the menstrual flux, a flabby fetus destined to die soon is conceived; this would not happen if menstruation were not the matter of the fetus. Nevertheless, he quickly answers that the weakness of the fetus, in this case, is due to the fact that, during the menstrual flux, the vulva is corrupted (i.e., infected by the menstruation).[167]

---

165 'Secundum sciendum quod menstruum est duplex: quoddam est bene dispositum et digestum, et est illa materia quam emictit mulier quando est in coytu; aliud est magis indigestum et indispositum, et est illud quod in mense fluit de mulieribus, et ideo dicitur menstruum proprie a mense'. See E, q. 7, 12.

166 'Et tunc est prima conclusio quod menstruum bene dispositum est materia fetus. Probatur: illud quod emictitur a muliere in omni concepcione embrionis tempore coytus est materia fetus; sed menstruum mulieris bene dispositum est huiusmodi; igitur etc. Maior patet. Minor declaratur quia: solum menstruum bene dispositum causat delectacionem in coytu et solum istud menstruum emictitur a muliere in concepcione embrionis'. See E, q. 7, 13.

167 'Secunda conclusio: quod menstruum male dispositum et secundo modo dictum non est materia fetus. Probatur: si sic, sequeretur quod tale menstruum aliquando emicteretur in concepcione embrionis. Consequens est falsum. Et ideo dicitur nono *De historiis*: 'natura quidem enim concepciones fiunt post remocionem menstruorum in mulieribus.' Similiter tale menstruum non causat delectacionem in coytu nec est dispositum ad recipiendum formam hominis, sed magis causat dolorem quando emictitur in corpore tempore fluxus. Et ideo dicitur *loco preallegato* quod suffocaciones et impulsus fiant in matricibus donec fluunt menstrua. Tenet prima consequencia, quia, cum embrio componeretur ex menstruo male disposito, oportet quod emicteretur. Sed contra hoc arguitur quia: in tempore fluxus menstruorum concipitur fetus morbidus et cito moriturus, quod non esset nisi menstruum male dispositum esset materia fetus. Dicendum quod ista non est causa; sed causa est quia tempore fluxus menstruorum vulva mulieris est infecta et propter hoc semina ad ipsam proiecta inficiuntur, ex quibus generatur fetus racione menstrui emissi male dispositi'. See E, q. 7, 14–17.

In q. 7, Buridan has finally established the role of the female seed: it constitutes the matter of the fetus. Yet a question remains open: why is it possible for the female seed to be the matter of the fetus, while the menstrual flow cannot? Buridan makes this problem explicit in the final part of the *quaestio*, when answering to the initial arguments. He explains that a *menstruum* that has a bad disposition (*menstruum male dispositum*) cannot be the matter of the fetus. But *menstruum* in the sense of a seed emitted during intercourse is not badly disposed because it is digested and cooked.[168] Hence, Buridan has to answer an unavoidable consequential question: if the female seed constitutes the matter of the fetus, which is the role of the menstrual flow? His answer is that *menstruum* conceived as the menstrual flow constitutes the nourishment of the fetus.[169]

Buridan wants to remain faithful to the Aristotelian position according to which the male provides the form and the female provides the matter to the fetus. Therefore, he attributes to the female seed the role of matter in the constitution of the embryo. In order to warrant his commitment to the hylomorphic position, Buridan also adds, in the final part of q. 7, that the female seed is the matter of the fetus only under its material aspect, and not as a compound of matter and form. In fact, the female seed loses its own form when the form of the human being is introduced; i.e., when, during conception, male sperm brings its generative contribution by providing the form to

168 'Ad primam: conceditur maior. Et similiter minor, quia conclusio est pro secunda conclusione, quia tale menstruum, cum sit indispositum, non est materia fetus. Aliter dicitur negando minorem de menstruo emisso in coytu'. See E, q. 7, 23.

169 'Ad quintam: posset negari maior, quia ex eisdem sumus et nutrimus, ut patet secundo *De anima*. Aliter dicitur ad minorem, concedendo maiorem quod menstruum male dispositum et emissum in mense est nutrimentum fetus, sed hoc non est verum de menstruo quod emictitur in coytu'. See E, q. 7, 27. This was also Albertus Magnus' solution in the *De animalibus*, a work in which he is less faithful to the Aristotelian position on the issue of the female contribution to generation than in the *Quaestiones de animalibus*. On this point, see L. Demaitre and A.A. Travill, 'Human Embryology and Development in the Works of Albertus Magnus', in: J.A. Weisheipl (ed), *Albertus Magnus and the Sciences: commemorative essays*, Pontifical Institute of Medieval Studies, Toronto 1980, 406–440, esp. 416–418, and D. Jacquart and C. Thomasset, 'Albert Le Grand et les Problémes de la Sexualité', *History and Philosophy of the Life Sciences*, 3, 1 (1981), 73–93. esp. 77–81. Although in a different way than Buridan, Taddeo Alderotti also refers to the menstrual flow as the nutriment of the fetus and to the female sperm as the matter of the fetus. See N. Siraisi, *Taddeo Alderotti and his Pupils. Two Generations of Italian Medical Learning*, Princeton University Press, Princeton 1981, esp. 198.

Note also that compared to what Buridan says in the previous question, it can sound as a strange answer. In fact, above, Buridan argued that menstrual flow is expelled before the conception takes place. See *supra*, 116. It can be therefore asked where does the fetus get the menstrual flow from. Buridan is evidently not aware of this inconsistency.

the embryo.[170] At the same time, he wants to make this hylomorphic view compatible with the effective existence of a proper female seed distinct from the menstrual flow. Therefore, he distinguishes between the two substances: one, namely the female seed, is digested, purer, and linked to pleasure; the other, namely the menstrual flow, is undigested, impure, and linked to pain.

Buridan's q. 7 turns out to be a detailed investigation of the nature of female seed. In fact, the second part of the question is devoted to a description of the characteristics of *menstruum* according to its quantities, qualities (color and density), and times of flux.[171] In Buridan's description, these characteristics mostly depend on bodily humors. As regards the color, the prevalent color for monthly *menstruum* is red; the common color for *menstruum* emitted during intercourse is white.[172] This proves again the analogy between male and female seed; and, at the same time, this confirms the difference between female seed and monthly flow.[173]

---

170 'Ad sextam: conceditur maior quod secundum totum non est materia fetus, sed secundum eius materiam. Modo sic est in proposito de menstruo quod antequam forma hominis educatur de potencia seminum, forma menstrui corrumpitur, sed materia manet, quia in materia in qua prius fuit forma menstrui introducitur forma hominis mediantibus aliis disposicionibus'. See E, q. 7, 28.

Note that this position does not exclude the medical opinion according to which sperm can also be a material part of the fetus, forming some parts of it. In fact, Buridan never denies this possibility.

171 'Quantum ad secundum ⟨dicendum⟩ quod menstrua diversificantur in quantitate et qualitate et tempore'. See E, q. 7, 18.

172 'Ut in pluribus tamen sunt ad colorem sanguinis. Et ista intelliguntur de menstruo emisso in mense. Sed color emissi in coytu est in pluribus ad modum lactis. In raritate et densitate differunt secundum maiorem vel minorem digestionem'. See E, q. 7, 20.

173 Buridan provides a more detailed account of the menstrual flow in the final *quaestio* of his commentary (q. 8). In the first part of the *quaestio*, Buridan describes the relationship between menstrual flow, moon phases, and complexions. See the following chapter of this thesis, *infra*, 155–159. In the final part of the question, he lists the causes of menstrual flow and the signs of a woman suffering the period. He also introduces a few *dubitationes* concerning two typical medieval issues related to menstruation: whether it is good to have intercourse with a woman during her period, and why women do not damage themselves with the menstruation. Among the various medieval forms of common thinking about menstruation, Buridan reports also the famous idea of women staining mirrors when looking at them while having their period: 'Et ideo dicitur in *Sompno et vigilia* quod mulier menstruosa inspiciens speculum ipsum inficit generando in eum maculas rubeas; et hoc magis contingit si illud speculum sit novum et bene mundum, quia tunc forcius imprimitur et de difficili tales macule abstergentur'. See E, q. 8, 33. This *topos* is also found in the third redaction of Buridan's commentary on *De anima*, book II, q. 9: 'Item aliqui arguunt per experientias quod mulier menstruosa, visu, inficit speculum …'. See John Buridan, *Quaestiones* De anima, II, *tertia lectura*, ed. by P. Sobol, cit., 126.

The various medieval views of menstruation have been widely analyzed by scholars. See the book by G. Howie and A. Shail (eds), *Menstruation: a Cultural History*, Palgrave Macmillan, London-

A key to understand the analogy between male and female seeds, and the difference between the female seed and the menstrual flow in Buridan's text, resides also in some considerations on sexual pleasure Buridan introduces in q. 7 and in several other places in his commentary on *De secretis mulierum*. Against the Aristotelian conclusion that the female does not emit any generative seed because women can conceive without feeling pleasure during intercourse,[174] Buridan argues (in q. 5) that the lack of pleasure does not necessarily imply that women do not emit seed. The emission of seed, in fact, is not necessarily linked to pleasure:[175] it also happens to men to emit their seed without pleasure, as for example during dreams or in the case of some diseases (e.g., gonorrhea).[176] Thus Buridan again underlines the analogy between the two seeds: in certain circumstances, they can both be emitted without pleasure; therefore

---

New York 2005. In particular, the contributions by B. Bildhauer, 'The Secrets of Women (c. 1300): a Medieval Perspective on Menstruation', in: *Menstruation: a Cultural History*, G. Howie and A. Shail (eds), Palgrave Macmillan, London-New York 2005, 65–73 and M.H. Green, 'Flowers, Poisons and Men: Menstruation, in Medieval Western Europe', *Menstruation: a Cultural History*, in: G. Howie and A. Shail (eds.), Palgrave Macmillan, London-New York 2005, 51–63. See also the Introduction by H.R. Lemay in pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, in: *Women's secrets: a Translation of pseudo-Albertus Magnus'* De secretis mulierum *with commentaries*, State University of New York Press, Albany 1992, 35–49. Lemay provides a detailed historical account of menses in medieval texts. For the specific topic of the venomous women and the menstrual flow in the *De secretis mulierum*, see J.P. Barragán Nieto, '*Secretos de las mujeres*. Sangre menstrual y mujer venenosa en la Baja Edad Media', in: C. de la Rosa Cubo (ed), *Innovación Educativa e Historia de las Relaciones de Género*, Universidad de Valladolid, Valladolid 2010, 91–104. See also J.L. Canet, 'La mujer venenosa en la época medieval', *Lemir. Revista de Literatura Española Medieval y del Renacimiento*, 1 (1996–1997), http://parnaseo.uv.es/Lemir/Revista/Revista1/Mujer_venenosa.html.

174 This is the first argument listed at the beginning of q. 5 against the existence of a female seed: 'Primo quia: dicitur primo *De generacione animalium*: 'accidit mulierem concipere sine delectacione'; modo semen nunquam emictitur, ut videtur, nisi causetur delectacio; ergo a destructione consequentis, si non causatur delectacio, non emictitur semen'. See E, q. 5, 3. Buridan is referring to Aristotle's position in *De generatione animalium*, see Arist., *De gen. an.*, I.19–20, 727b6–9, 33, 728a2, 31–36.

175 Buridan devotes a *dubitatio* of q. 5 to this point: 'Sed circa dicta dubitatur: utrum mulieres semper delectentur in emissione seminis. Ad hoc respondet Philosophus *ibidem*: dicit quod non. Et ideo dicit: 'non accidente tamen consueta fieri femellis, scilicet in coytu, delectacione circa collusionem talem concipiunt, si fuerit locus dispositus et descendentes matrices prope.' Et sequitur: 'sed ut in pluribus evenit illo modo,' scilicet quod concipiant facta delectacione in coytu. Et ideo dicit Philosophus statim post quod facta emissione seminum, si mulier delectetur in coytu, quod tunc melius accidit spermati quantum ad disposicionem fetus'. See E, q. 5, 16.

176 This is the answer to the first argument listed at the beginning of q. 5 (see *supra*, footnote 153): 'Ad primam: conceditur quod mulier bene impregnatur sine delectacione in principio, et hoc contingit propter habundanciam materie. Tamen hoc non obstat quin emictat semen. Et ideo non valet: 'non causatur delectacio, ergo nec emictitur semen,' quia in viris aliquando sic accidit in sompniis et aliquando in quadam passione, que dicitur goinorrea'. See E, q. 5, 23.

pleasure, in both cases, is not a necessary aspect for their definition as generative seeds. Furthermore, in q. 7, the corporeal sensations of pleasure and pain play a role in the definition of the difference between female seed and menstrual flow. The menstrual flow is associated with pain whereas female seed is connected with pleasure.[177]

177 See *supra*, footnotes 166 and 167. Reflections on sexual pleasure were widespread in late medieval works. See J. Cadden, *Meanings of Sex Difference in the Middle Ages. Medicine, Science and Culture*, 141–165. See also the contribution by G. Coucke, '*Non adeo est honesta ut delectabilis*. Sexual Pleasure in Medieval Medicine: the Case of Petrus de Abano', in: C. Casagrande and S. Vecchio (eds), *Piacere e dolore. Materiali per una storia delle passioni nel Medioevo*, SISMEL Edizioni del Galluzzo, Firenze 2009, 117–148. Although the literature on this topic is very rich, I refer particularly to the contributions by Cadden and Coucke because their works shed light on an important aspect of the medieval discussion of sexual pleasure: its connection with the sense of touch. It is interesting to notice that Buridan uses the case of sexual pleasure and the sense of touch to discuss the issue of the number of external senses in the third redaction of his commentary on Aristotle's *De anima* (QDA$_3$, II, q. 20: *Utrum sint tantum quinque sensus exteriores*, 332–351). Buridan asks whether the sensation caused by the passage of the sperm in the genital members is due to another type of touch than the one commonly used in touch sensation. His answer is negative (Buridan agrees with the Aristotelian description of five external senses) but his reflection turns out to be extremely nuanced. The text in q. 20 is undoubtedly important in itself because it testifies to Buridan's multifaceted talent in analyzing topics related to psychology, and it reveals Buridan's willingness in grasping the problems connected to sensation through physiological issues (as in the case of the localization of the common sense). For this reason, it would be interesting to compare Buridan's text with other late medieval commentaries on the *De anima* in which a question (or questions) on the number of the external sense appears (for the fourteenth century, see, for example, John of Jandun, *Quaestiones super* de anima, Venezia 1480, q. II.32: *Utrum sensus sint quinque et non plures neque pauciores* and the texts in the manuscripts quoted by P. Marshall, 'Parisian Psychology in the Mid-fourteenth Century', cit., 135. Relevant texts on this topic are also in Blasius of Parma. See, G. Federici Vescovini, *Le* Quaestiones de anima *di Biagio Pelacani da Parma*, Leo S. Olschki Editore, Firenze 1974, 49). In this way, it would be possible to see how differently authors deal with this issue and whether the problem of 'sexual pleasure and the sense of touch' was introduced in their accounts of the number of external senses. To stick with the topic of this section, it is worthwhile to note the information this *quaestio* provides on Buridan's conception of sexual pleasure. Buridan describes the sensation perceived by the sense of touch during the emission of seed as follows: 'Tunc ergo ad propositum diceretur quod in virga virile sentitur commotio spirituum et ventositatum inflammantium et fluxus spermatis et exterius aliae confricationes ad hoc concurrentes' (See QDA$_3$, II, q. 20, 350). The description of the ejaculation in terms of 'ventositas' was typical of medieval accounts of generation (see D. Jacquart and C. Thomasset, *Sexualité et savoir medical au Moyen Age*, cit., 110, see also T. Laqueur, op. cit., 43–52, esp. 45). In QDA$_3$, II, q. 20, Buridan also refers to the 'confricatio', namely the rubbing of the members that provokes the sexual pleasure and that is linked to the emission of seed (see the passage of q. 3 in the commentary on the *De secretis mulierum* in which Buridan describes the act of intercourse, *supra*, footnote 128). In this *quaestio* of the *De anima*, Buridan also summarizes the aim of sexual pleasure: the *delectatio* is linked to the natural inclination to procreation: 'Nunc ergo, cum generare sibi simile in viventibus naturalissimum operum, ut dicitur secundo *huius*, sequitur quod coitus et emissio spermatis et alii motus ad hoc

3.3.2. *A Recapitulation of Buridan's Theory on Human Reproduction*

Buridan's account of human generation can be summarized as follows. Man and woman make their own contributions to generation. In fact, both of them properly emit a generative seed during intercourse. In a proper sense male seed is called 'sperm', but in a broader sense female seed can also be called 'sperm'.

The main role of male sperm is to provide the offspring with its proper *form* and, in this sense, it is not possible to conceive sperm as entering the substance of the fetus. Nevertheless, male sperm can be said to enter the substance of the fetus and to provide some material parts to it if we take 'sperm' in its material sense, namely as the material superfluity produced during the final stage of the process of nutrition. Female seed constitutes the *matter* of the fetus. In the act of conception, when it is unified with male sperm, female seed loses its own formal aspect, because a new form is induced by male contribution. Female seed, which is commonly called '*menstruum*', differs from the *menstruum* in the sense of the monthly superfluity that flows in women. This latter *menstruum* is less cooked and digested than the former one, and it does not constitute the matter of the embryo; yet, it plays the role of nutriment of the fetus. Buridan therefore embraces a hylomorphic Aristotelian position, namely the idea according to which the male provides the form and the female the matter of the embryo. Nevertheless, he maintains the existence of a female seed, which differs from the menstrual flow.

On the process of the emission of the two generative seeds and the reception of the seeds in the womb, Buridan presents the following opinion as the most plausible one: (1) first, male sperm is emitted in the vulva; (2) then the womb overheats and attracts male sperm; (3) the womb closes and, at that point, the woman emits her own seed, which is attracted by the womb through the virtue of male sperm. Buridan finds that this opinion is confirmed by the famous example of the virgin in the bath narrated by Averroes in the *Colliget*. Nevertheless, against Averroes' statement, Buridan underlines that the womb does not attract the male sperm thanks to its inner power, but thanks to its heat.

---

ordinate et in membris in quibus sunt ad hoc ordinate, et quando natura hoc exigit sunt valde delectabiles'. (See QDA3, II, q. 20, 351). This is exactly the ultimate reason Buridan brings to explain why the sensation felt in the genital members is not due to another sense than the sense of touch: this peculiar pleasure is felt only in the genital members not because *an additional* external sense is present in these corporeal parts, but just because the other corporeal members are not designed for reproduction, so they cannot feel the same sensations as the genitals: 'Et non essent tales motus delectabiles in aliis membris non ad hoc per natura ordinatis'. (See QDA3, II, q. 20, 351).

The composite of male sperm and female seed constitutes the embryo, which consolidates and grows until the birth of the baby. Note that Buridan does not offer any detailed theory on the animation of the embryo. The only brief remark loosely connected to a theory of the animation of the embryo is the following one: '… an embryo first lives the life of a plant, then the life of an animal, and after that the life of a human being' (q. 3). Yet, this is just a quotation from Aristotle's *De generatione animalium* Buridan gives *en passant* in his initial argumentation without further commenting on it.[178]

3.3.3. *Conclusions*

Buridan's account of generation fits in the late medieval trend of reconciliation of the Aristotelian and Galenic traditions. This trend was inspired by Avicenna's reading of the Aristotelian and Galenic positions, and was found in many medieval theories of generation. How did Buridan achieve this reconciliation? Which was the main conceptual framework in which he developed his theories? Which was his attitude towards the Galenic tradition and towards medicine in general? This section tried to provide some important elements needed in order to shed light on these questions.

Just as the majority of medieval authors – especially philosophers and theologians, but also physicians – Buridan used the Aristotelian conceptual system to describe human generation: male sperm gives the only properly active contribution to generation, while the female contribution is only passive, material; male sperm organizes the female material contribution thanks to its formative virtue. The roles of male and female in generation are clearly articulated in hylomorphic terms. In general, the references to Aristotelian texts are constant throughout all the questions of Buridan's commentary on *De secretis mulierum*, and Aristotle is the most often quoted

178 'De quo dicitur in quarto *De generacione animalium* quod embrio primo vivit vita plante, deinde animalis et post vita hominis'. See E, q. 3, 13. See Arist., *De gen. an.*, II, 3, 736a35–36, 736b1–2, 12–15. This sentence was a very common one. See the relevant phrase from the *Auctoritates Aristotelis*: 'Embryo primo vivit vita plantae, deinde vita animalis et postea vita hominis' in Anonymous, *Auctoritates Aristotelis*, ed. by J. Hamesse, in: *Les* Auctoritates Aristotelis. *Un florilège médiéval. Etude historique et édition critique*, Publications Universitaires-B. Nauwelaerts, Leuven-Paris 1974, 225 (AA 9: 203).

On the medieval views about the animation of the embryo, see P. Caspar, 'La problématique de l'animation de l'embryon. Survol historique et enjeux dogmatique', *Nouvelle revue théologique* 113 (1991), 3–25, 239–255, 400–413 and M. Van der Lugt, 'L'animation de lembryon humain et le statut de l'enfant à naître dans la pensée médiévale', in: L. Brisson, M.-H. Congourdeau and J.-L. Solère (eds), *L'animation de l'embryon humain et le statut de l'enfant à naître dans la pensée médiévale*, Vrin, Paris 2004, 234–254.

author.[179] Buridan uses Aristotle's authority even when he wants to demonstrate a non-Aristotelian point, such as the existence of a female generative seed.

At the same time, within this basic Aristotelian framework, Buridan develops a personal reading of the generative process, with the clear aim of devoting as much attention as possible to the Galenic position, and to medicine in general. First, Buridan supports a certain version of the two-seeds-theory: there is not only a male generative seed, but also a female generative seed that can be called 'sperm', albeit in a broader sense. Just as male sperm, the female generative seed is the product of the third and final stage of digestion and is emitted during intercourse. This female seed shares with male sperm certain external qualities, like color, and it is often emitted with pleasure, just as male sperm is. This female seed differs from the menstruation and constitutes the only proper material contribution to generation.

Second, Buridan also devotes an entire question (q. 4) to the controversy between philosophers and physicians about the problem of the material presence of male sperm in the embryo after conception. When resolving this point of controversy, Buridan clearly wants to make the Galenic position compatible with his basic Aristotelian hylomorphic framework: he shows how the rejection of the Galenic position can be avoided if the proper distinctions between the material and the formal sense in which the notion of (male) 'sperm' can be conceived are made. In q. 4 he suggests that it is reasonable to think that sperm enters the matter of the fetus and constitutes some of the corporeal parts of it, if sperm is seen materially, namely as a corporeal superfluity produced during the last stage of digestion. Hence Buridan does not deny the possibility of the male material contribution to generation in any parts of his commentary. Thus, concerning the main issues of the long-lasting dispute about the roles of male and female in reproduction, Buridan does not hide his sympathy vis-à-vis the Galenic tradition.

Third, Buridan seems to be acquainted with medical texts. He does not only mention medical authorities like Galen or Avicenna, but also often goes into details of medical doctrines. This is clear, for example, when he outlines the process of digestion through the work of a medical author, Isaac Israeli. This author is not mentioned as

179 Note that Buridan often refers to both translations of Aristotelian works on animals: Michael Scot's Arabic-Latin translation (the *antiqua translatio*) and William of Moerbeke's Greek-Latin translation (the *nova translatio*). See Appendix A. The editions of these translations are: Aristotle, *De generatione animalium* (*translatio vetus*) ed. by A.M.I. Van Oppenraaij, in: *Aristotle*, De Animalibus, *Michael Scot's Arabic-Latin Translation, Part Three, Books XV–XIX: Generation of Animals*, Brill, Leiden 1992 and Aristotle, *De generatione animalium* (*translatio nova*), ed. by H.J. Drossaart Lulofs, in: *De generatione animalium, translatio Guillelmi de Moerbeka*, Desclee de Brouwer, Bruges-Paris 1966.

an authority in pseudo-Albertus' *De secretis mulierum*: this confirms Buridan's interest in Isaac Israeli as a medical authority, independently from the text he is commenting on. Buridan also provides many details when he explains the characteristic of the *menstruum* by not merely describing its efficient, material, formal, and final causes, but also its physical aspects (colors, density, and time of flux) mostly in terms of the medical core concept of 'humors'. In the final question of his commentary (q. 8), which has not been addressed here but will be further developed in the next chapter of this thesis,[180] Buridan connects the menstrual flow to the medical concept of 'complexion'.

From the previous considerations, it emerges that Buridan takes into serious consideration medical authorities and doctrines about the human body: he offers some discussions of medical positions and seems to be interested in medical solutions to the various problems concerning human generation. Buridan's approach to medicine does not merely and uniquely represent a conformation to a general late medieval trend of searching a concordance between philosophical and medical theories. Within a well-established, basic Aristotelian framework, Buridan makes as much room as possible for medical teachings – e.g. the two-seed theory or the male material contribution to generation – so as to better understand and explain the reproductive process as it seems to happen in nature.

180 See *infra*, 155–159.

CHAPTER 4

Buridan's use of Medical Doctrines: Some Examples

This chapter examines if, to what extent, and how, besides the examples taken from the controversy between philosophers and physicians, Buridan integrates certain medical doctrines in his commentaries on the *corpus* of Aristotle's works on natural philosophy. Two case studies will be addressed: the case of complexion and the case of radical moisture. These paradigmatic topics will provide us with additional elements that help us further reconstruct Buridan's relation to medicine.

4.1. *Complexio* and *humidum radicale*: In-between Medicine and Philosophy

The study of the controversy between philosophers and physicians certainly is the most obvious point of departure to explore the relationship between natural philosophy and medicine in a late medieval author. Nevertheless, in the case of John Buridan, it is not the only starting point to investigate his attitude *vis-à-vis* medicine. In fact, there are some capital concepts and issues not belonging to the controversy that make it possible to examine a late medieval natural philosopher's approach to medicine. These concepts and issues, taken directly from the history of medieval medicine, allow us to see to what extent, and in what ways, natural philosophers took advantage of them. There are especially two paradigmatic concepts that can play this role: the concept of 'complexion' and the concept of 'radical moisture'. Both concepts have medicine as the main framework of their origin and development. Both of them found their origin in the Ancient world but acquired great importance and advancement in the Middle Ages. Both of them constitute cluster concepts, to which many other relevant ideas were linked. In the case of complexion, for example, there is a connection with such central issues as humours, health, and latitude. On the other hand, the notion of 'radical moisture' goes together with the concept of 'nutrimental moisture' in problems related to the length of life, diseases, causes of death, nutrition processes, and generation. Above all, both concepts seem to have been popular enough to attract the attention of scholars working outside the faculty of medicine, like theologians, natural philosophers, and alchemists. These concepts are therefore, at least potentially, 'in-between' many disciplines. This entails that they could be used, and in fact were used, to deal with issues other than strictly

medical ones. The concepts of 'complexion' and 'radical moisture', for example, entered theological debates on the human nature, ontological inquiries about mixtures, and alchemical discussions about the transformation of nature.[1] For these reasons, the concepts of 'complexion' and 'radical moisture' constitute valuable instruments to further elaborate on the epistemological relations between disciplines in the Middle Ages, most notably natural philosophy and medicine.

The next two sections will examine Buridan's use of these concepts in the framework of his natural philosophy.

4.2. Buridan and the Concept of 'Complexion' (*complexio*)

> Debet autem scire quod equale de quo medici in suis inquisitionibus tractant non est denominatum ab equalitate in qua equalitas est pondere equaliter existit, sed denominatur a iustitia in divisione
>
> Avicenna, *Canon*, Lyon 1498, I.1.3.1

'Complexion' constitutes one of the longest lasting concepts in the history of philosophy and science from Antiquity to the Modern Era. It was constantly used in medical theory and in medical treatments. In the late Middle Ages, this concept was analyzed in depth by physicians in the framework of the university: mostly in Italy, but also elsewhere, physicians developed elaborate theories about complexion with far-reaching consequences for the conception of the human being. Due to its importance and comprehensiveness, this medical key concept was also incorporated in natural philosophical and theological discourses.[2] Therefore, the concept of 'complex-

1 For literature on these topics, see the studies quoted in the sections on complexion and radical moisture here below, especially in footnotes 2 and 73–78.

2 See J. Chandelier and A. Robert, 'Nature humaine et complexion du corps chez les médecins italiens de la fin du Moyen Âge', *Revue de synthèse*, 134, 6, 4 (2013), 473–510. On the importance of the concept of 'complexion', see also J. Kaye's recent book in which he explains that the concept of 'balance' in medieval medical theory was one of the key elements in the emergence of a new model of equilibrium spread out in the fourteenth century. See J. Kaye, *A History of Balance, 1250–1375. The Emergence of a New Model of Equilibrium and its Impact on Thought*, Cambridge University Press, Cambridge 2014, 128–240. For the concept of 'complexion' in medieval and early Renaissance medicine, see N. Siraisi, *Medieval and Early Renaissance Medicine*, The University of Chicago Press, Chicago 1990, 101–104. On the concept of 'complexion' in the fourteenth and fifteenth centuries, see P.-G. Ottosson, *Scholastic Medicine and Philosophy. A Study of Commentaries on Galen's* Tegni *(ca. 1300–1400)*, Bibliopolis, Napoli 1984, 127–194.

ion' constitutes a privileged point of departure in order to study how philosophers allowed medical doctrines to interact with the natural philosophy taught in the Faculty of Arts. This is especially true for the natural philosophers working at the Faculty of Arts of the University of Paris, an institutional framework in which careers in medicine and arts were more distinct than in Italy. Yet scholars have especially studied how the Galenic concept of 'complexion' entered late medieval medical works, largely neglecting the question of whether, and how, it was used by 'genuine' natural philosophers (i.e., philosophers who were not professionally engaged in medicine). The present section addresses Buridan's use of the medical concept of 'complexion' in the framework of his natural philosophy. Buridan provides us with an example of a 'pure' natural philosopher integrating the concept of 'complexion' in his writings on natural philosophy.

4.2.1. *Buridan on Complexion*

The concept of '*complexio*' (*krasis* in Greek) is one of the pivotal concepts in Galen's medical theory.[3] In fact, it constitutes the basis of Galen's idea of health as a balanced state of the body and its parts. Complexion is defined as 'a balanced blend … of the *primary qualities* (hot, cold, wet, and dry) that results from the mixture of the *primary elements* [(earth, air, water, fire)] within the living body as a whole and in each of its working parts'.[4] As Galen incorporated the Hippocratic idea of 'humors' in his medical theory, the concept of 'complexion' is also linked with the balance of blood, yellow bile, black bile, and phlegm. In Galen's view, the concept of 'complexion' concerns both the species in general and each individual living organism. Moreover, in the medical tradition, complexion has always been conceived as a comparative and relational entity, relativized according to the internal and external conditions of a singular species, an individual body, and a particular organ: a perfectly balanced complexion was seen as impossible to be found in nature.[5]

The Galenic concept of 'complexion' appeared in the Latin cultural *milieu* through the translation of Galen's works and the mediation of Avicenna. Medieval medical theorists incorporated the concept of 'complexion' in their reflections on living

3 For the medieval Latin translation of the term '*krasis*' as '*complexio*', see D. Jacquart, 'De crasis à complexio: note sur le vocabulaire du temperament en latin médiéval', in: G. Sabbah (ed), Textes médicaux latins antiques, Publications de l'Université de Saint-Etienne, Saint-Etienne 1984, 71–76.

4 See J. Kaye, *A History of Balance*, cit., 146–147. My emphasis.

5 See J. Kaye, *A History of Balance*, cit., 137–182.

organisms, especially when commenting on Galen; but the Galenic concept of 'complexion' also entered the works of the philosophers. On the one hand, it can be found in texts where issues related to primary qualities and elements are discussed (most prominently in commentaries on Aristotle's *De generatione et corruptione*). On the other hand, we can search for it also in more strictly biological texts, like commentaries on Aristotle's *Parva naturalia*, where philosophers deal with the theory of humors and the conditions for a long life (*De longitudine et brevitate vitae*). In the particular case of John Buridan, it is possible to find some reflections on complexion also in his *quaestiones* on pseudo-Albertus Magnus' *De secretis mulierum*.

Therefore, sections of Buridan's commentaries on *De generatione et corruptione*, on the *Parva naturalia*, and on the *De secretis mulierum* will be discussed here. Through a comparison with Buridan's contemporaries or quasi-contemporaries in Paris (Nicole Oresme, Albert of Saxony, Marsilius of Inghen), it will also be possible to evaluate Buridan's role in his cultural *milieu* with respect to the use of the medical concept of 'complexion' in the framework of natural philosophy. Likewise, Buridan's texts on complexion will be compared with treatises on theoretical medicine written by Parisian physicians active more or less at the same time as Buridan. In this way, it will be possible to see to what extent, and how, Buridan allows contemporary medical reflections on human beings to interact with his natural philosophy.

4.2.1.1. Temperamentum ad pondus *and* temperamentum ad iustitiam

One of the most widely discussed issues concerning complexion that late medieval physicians addressed in the footsteps of Galen and Avicenna was the difference between a perfectly tempered complexion (*temperamentum ad pondus*) and a merely relatively tempered complexion, i.e., a complexion blended and balanced according to several factors (*temperamentum ad iustitiam*).[6] Buridan addresses this issue in his commentary on Aristotle's *De generatione et corruptione*, in the context of Aristotle's remarks about elements and qualities in the *mixtum*.

---

6 Avicenna borrowed the distinction between 'equality according to weight and measure' and 'tempered according to justice' from Galen. See the following passage from Galen's *De complexionibus*: 'Tale autem aliquid et iustitiam esse dicimus, non pondere et mensura id quod equale, sed decente et secundum dignitatem scrutantem' (Galen, *De complexionibus*, ed. by R.J. Durling, in: *Burgundio of Pisa's Translation of Galen's* De complexionibus, W. de Gruyter, Berlin-New York 1976, 30). See also Avicenna' *Canon*: 'Debet autem scire quod equale de quo medici in suis inquisitionibus tractant non est denominatum ab equalitate in qua equalitas est pondere equaliter existit, sed denominatur a iustitia in divisione' (Avicenna, *Canon*, Lyon 1498, I.1.3.1).

4.2.1.1.1. The Perfectly Tempered Mixture

In his commentary on Aristotle's *De generatione et corruptione*, Buridan faces the problem whether there can be a perfectly tempered mixture (q. II.11: *Utrum possibile sit esse aliquod mixtum simpliciter et perfecte temperatum*).[7] While Buridan is obviously not asking a strictly medical question on complexion, his answer to it directly involves (and bases its solution on) medical discussions on complexion.

As it will be shown, Buridan uses the Galenic concept of 'complexion', and the distinction between *temperamentum ad iustitiam* and *temperamentum ad pondus*, in order to shed light on the natural philosophical question about the mixture as a blended mix of qualities.

Buridan first presents some arguments in favor of an affirmative answer to the question on the possibility of a perfectly tempered mixture. The following argument is particularly interesting, because it focuses on the Galenic definition of health: health occurs when humors are tempered; therefore, if a mixture cannot be perfectly tempered, it cannot be healthy; but this consequence is not acceptable; therefore a perfectly tempered mixture must exist.[8] Subsequently, Buridan introduces the negative answer to the question by presenting Averroes' position in *De generatione et corruptione*, *De caelo*, and *Colliget*. According to Averroes, a perfectly tempered mixture, i.e. a mixture in which no element dominates, is unconceivable, because it would not have any natural motion (every natural motion, in fact, is due to the nature of the dominant element) and, as a consequence, it would not have a natural place to rest so that it would be at rest wherever posed; moreover, it would not have a natural action, because natural action cannot arise from a state in which there is no disequilibrium among the elements; and, finally, it would be perpetual, because, if the contraries qualities do not overcome each other, there is no way a body can be corrupted due to an excess or a lack of heat or to an excess or a lack of coldness.[9]

---

7 John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros *De generatione et corruptione* Aristotelis, *A Critical Edition with an Introduction*, Brill, Leiden 2010, 243–248. Henceforth QGC, q. II.11.

8 'Secundo. Sanitas consistit in adaequatione et per consequens in temperatione humorum. Igitur si non posset esse perfecte temperatum, non posset esse perfecte sanum; quod videtur inconveniens'. QGC, q. II.11, 243.

9 'Oppositum dicit Commentator secundo *huius* et primo *Caeli* et in suo *Colliget*. Et ad hoc probandum arguit quia: si esset mixtum simpliciter temperatum, scilicet in quo nullum elementorum haberet dominium, sequeretur quod illud mixtum non haberet aliquem motum naturalem localem, quia dicit Aristoteles primo Caeli quod mixtum non movetur naturaliter nisi secundum natura elementi praedominantis; et si nullum dominaretur, igitur non haberet motum naturalem; quod est inconveniens. Immo ultra sequeretur quod non haberet quietem naturalem, quia nullum grave vel

Given the strength of the arguments for both sides, the initial question would probably remain open and unsolved if an important note were not introduced. This is the reason why, exactly at this point of the text, Buridan writes:

> Nota. Naturales et medici dicunt quod *duplex possumus imaginari temperamentum, scilicet ad iustitiam et ad pondus*. Et vocant *temperamentum ad iustitiam* ubi qualitates sunt optime redactae ad talem proportionem quae est optima ad exercendum operationes tali specie debitas. Et sic aliud est temperamentum in specie humana et aliud in specie ranarum aut muscarum. Nam proportio requisita ad operationes humanas multo plus abundat in calore quam proportio requisita ad operationes ranarum vel plantarum. Sed *temperamentum ad pondus* ipsi vocant medium inter summam caliditatem et summam siccitatem, et sic de ceteris qualitatibus.[10]

In order to solve the question, Buridan introduces the distinction between *temperamentum ad iustitiam* and *temperamentum ad pondus*. The first kind of *temperamentum*, he explains, entails the concept of 'proportion': the *temperamentum ad iustitiam* is proportioned in the best possible way in which a particular natural species can exercise its own operations. In this sense, different temperaments are found in different kinds, or species, of organisms (for example, human beings, frogs, and flies). In fact, human beings proportionally need much more heat than frogs or plants. On the contrary, the second kind of *temperamentum*, the *temperamentum ad pondus*, leaves the idea of proportionality aside: it is an absolute average between two qualities at their maximum level. For example, we can describe the *temperamentum ad pondus* as a medium temperature between a supposed hotness at its maximum possible level and a supposed coldness at its maximum possible level.

---

leve habet quietem naturalem nisi in loco ad quem moveretur naturaliter; modo ad nullum locum moveretur naturaliter, cum iam sit dictum quod non haberet motum naturalem. Etiam sequeretur quod ubicumque poneretur, quiesceret; quod de omni corpore naturali apparet falsum. Et patet consequentia, quia non esset elementum dominans movens ipsum; ideo quo ratione moveretur ad unam partem, eadem ratione ad aliam. Item sequeretur quod tale non haberet actionem naturalem, quia ab aequalitate non est actio. Item. Tale corpus, quantum esset ex se, esset perpetuum; quod videtur inconveniens, quia omne habens materiam est ex se corruptibile, scilicet propter suam materiam, quae ex se est in potentia ad aliud. Consequentia probatur quia: neutra qualitatum contrariarum abundaret in illo super aliam; ideo non esset aliqua ratio quare magis corrumperetur per abundantiam aut defectum caliditatis quam per abundantiam aut defectum frigiditatis. Et sic de aliis qualitatibus'. QQC, q. II.11, 244–245.

10 My emphasis. QQC, q. II.11, 245.

To solve the question, Buridan formulates three claims based on the medical distinction between the two kinds of *temperamentum*. The most important claim is the first one: whatever species is considered, the *temperamentum ad iustitiam* is possible.[11] In other words, Buridan admits that a perfectly tempered mixture is indeed possible, but only according to the proportional and relative meaning of '*temperamentum*' expressed by the notion '*temperamentum ad iustitiam*'. Moreover, Buridan underlines something typical of the medical (Galenic) idea of a well-blended complexion: even this possible kind of perfectly tempered mixture, proportional and relative, is a very rare phenomenon in nature. In fact, in order for it to obtain, many conditions must be satisfied simultaneously: the heavens must be in the best possible disposition, matter must be well-arranged, and the geographic region must be excellent and disposed as well as possible to receive the celestial influence.[12] Therefore, Buridan underlines, many people think that this well-blended complexion can last no longer than one instant.[13] Even though he tries to solve these critical remarks and objections,[14] Buridan seems to be somehow convinced by them in sofar as he comments: 'and this argument is difficult to contradict'.[15]

Second, Buridan admits the theoretical possibility of a *temperamentum ad pondus* concerning two opposite qualities, for example 'the most hot' (*calidissimum*) and 'the most cold' (*frigidissimum*). If we imagine a motion passing from *calidissimum* to *frigidissimum*, or vice versa, we must admit a middle point equidistant from the two extremes, and we must also think that the motion can stop exactly in that middle point, which is nothing else than the *temperamentum ad pondus*.[16]

---

11 'Prima conclusio est: possibile est in qualibet specie esse temperamentum ad iustitiam'. QGC, q. II.11, 245.

12 'Tamen nota quod valde raro potest contingere, quia oporteret caelum esse in optima dispositione et oporteret materiam bene esse praedispositam et etiam locum sive patriam esse in optima parte et dispositione ad caelum; et est difficile omnia illa concurrere'. QGC, q. II.11, 246.

13 'Nota. Multi imaginantur quod huiusmodi temperamentum simpliciter perfectum non potest naturaliter durare nisi per instans …' QGC, q. II.11, 246.

14 'Tamen posset dici quod illa ratio non arguit de inanimatis … quia nullum est inconveniens illa, si sint in optimo suo statu, remanere ibi diu sine alteratione'. QGC, q. II.11, 246.

15 'Et difficile est respondere ad illam rationem'. QGC, q. II.11, 246.

16 'Secunda conclusio quod quantum ad duas qualitates contrarias est dare temperamentum ad pondus, quoniam absurdum esset dicere quod de calidissimo fieret motus ad frigidissimum et non transiretur per medium aeque distans; et absurdum esset dicere quod ibi non posset quietari; et sic esset temperamentum ad pondus, puta ad duas qualitates, scilicet frigidum ad calidum et frigidum. Et ita de aliis'. QGC, q. II.11, 247.

However (and this is Buridan's third claim), the *temperamentum ad pondus* does not apply to the opposition of all qualities, namely to primary and secondary qualities at the same time. In fact, an element can be perfectly tempered with respect to its primary qualities, but it will never be, at the same time, perfectly tempered regarding some of its secondary qualities: for example, air can be perfectly tempered concerning the qualities of hot and cold, but it is always very thin, light, and subtle.[17]

In conclusion, Buridan's answer to the question concerning the possibility of a perfectly tempered mixture is articulated in terms of the medical distinction between *temperamentum ad iustitiam* and *temperamentum ad pondus*. A perfectly, absolutely and well-blended mixture never occurs in nature: the *temperamentum ad pondus* can be applied only to a supposed middle point in a theoretical continuum between two extreme primary qualities.[18] Nevertheless, perfectly tempered mixtures can be found in nature, albeit rarely, in sofar as they are considered to be tempered *ad iustitiam*, and always under specific, even unique and instantaneous, conditions.[19]

We find another link to medical discussions on complexion when Buridan replies to the argument concerning perfect health formulated at the beginning of the question.[20] According to Buridan, the correct, i.e. the Galenic, definition of health implies the concept of *temperamentum ad iustitiam*: '… sanitas consistit in adaequatione humorum *ad iustitiam* …'.[21] At this point, Buridan adds an important remark: this adjustment of humors, in which health consists, is not exact (*punctualis*); on the

17 'Tertia conclusio quod non potest demonstrari quod sit dare temperamentum ad pondus quantum ad contrarietatem omnium qualitatum, scilicet primarum et secondarum simul, quia in nullo corpore naturali hoc nobis apparet nec prope. Immo si terra sit medie calida et frigida, et medie humida et sicca, tamen est nimis grossa, nimis gravis. Et si aer sit medie calidus et frigidus, tamen nimis rarus, nimis levis, nimis subtilis. Et omnia mixta perfecta sunt magis gravia quam levia, magis grossa quam subtilia. Et si indicendo nullum invenitur quod non superabundet in aliqua qualitate prima vel secunda'. QGC, q. II.11, 247.

18 'Concedo enim quod sicut est dare intemperamentum, ita temperamentum sive ad iustitiam sive ad pondus in unaquaque contrarietate qualitatum. Et nulla natura intendit temperamentum ad pondus in omnibus contrarietatibus'. QGC, q. II.11, 247.

19 On the comparative and relational concept of 'complexion' in Galen and, more accentuated, in Avicenna, see M.R. McVaugh in Arnaldus of Villanova, *Aphorismi de gradibus*, ed. M.R. McVaugh, Universidat de Barcelona, Barcelona-Granada 1975, esp. 9–10, 20–22. Note that Buridan introduces a remark on the transience of the *complexio temperata* also in the third redaction of his commentary on the *De anima*: 'Et patet consequentia, quia numquam organa nostra sunt supreme bene disposita, nisi forte in uno momento propter hoc quod semper mutatur continue nostra complexio, ita quod numquam sit per tempus dare complexionem perfecte temperatam'. See QDA3, II, q. 11, 170.

20 See *supra*, 129.

21 QGC, q. II.11, 247.

contrary, it has a wide latitude (*magna latitudo*), namely it is situated in a wide range of possible degrees.[22] The Latin word '*latitudo*', used to describe a range in which the qualities of a subject are distributed, is a core concept of late medieval natural philosophy.[23] Thanks to Avicenna's assimilation of Galen's medical theory, to the Latin translations of Galen's *Tegni*, and to Ibn Ridwan's commentary on that work, the concept of 'latitude' also occupied a central place in medieval medical theories on complexion. In fact, it was used to explain the states of health and illness, and to introduce the idea of a bodily complexion varying in a range of possibilities, as a result of variable qualities of elements and humors.[24] Buridan seems to be aware of the use of the concept of 'latitude' in medical theories on complexion, and applies it in his commentary on D*e generatione et corruptione* to discuss the issue about the tempered mixture and to define 'health'.

4.2.1.1.2. Nicole Oresme, Albert of Saxony, and Marsilius of Inghen on Tempered Mixture

Recent literature claims for good reasons that it is improper to speak about a 'Buridan school' in which Buridan is seen as the teacher of a group of pupils repeating and developing his teachings.[25] It is also true that, in sofar as many works of the Parisian *milieu* are concerned, scholars have not yet established an exact chronology of the works and, as a consequence, a clear idea of the mutual influence among these authors is still lacking. Nevertheless, Buridan's influence on his contemporaries or quasi-contemporaries in the Parisian Faculty of Arts is undeniable. By comparing Buridan's question on the possibility of the perfectly tempered mixture with the same question in Nicole Oresme, Albert of Saxony, and Marsilius of Inghen, it is possible to argue that Buridan seems to have had a certain influence on his younger contemporaries on the

22 '... et non punctuali, sed habente magnam latitudinem'. QGC, q. II.11, 247.

23 See E. Jung, 'Intension and Remission of Forms', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 551–554 and E. Sylla, 'Medieval Concepts of the Latitude of Forms. The Oxford Calculators', *Archives d'histoire doctrinale et littéraire du Moyen Âge*, 40 (1973), 223–283.

24 See E. Jung, op. cit., 552. See also J. Chandelier and A. Robert, op. cit., 482, J. Kaye, op. cit., 202–205, and P.-G. Ottosson, op. cit., esp. 154–166 (esp. footnotes 122, 127, 130, and 131), 167–168, and 178–194.

25 See J.M.M.H. Thijssen, 'The Buridan School Reassessed. John Buridan and Albert of Saxony', *Vivarium* 42, 1 (2004) 18–42. See also O. Hallamaa, 'Nicholas Oresme', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 884–889, S.W. de Boer, 'Albert of Saxony', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 37–41 and M.J.F.M. Hoenen, 'Marsilius of Inghen', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 711–717.

topic of the possibility of a perfectly tempered mixture and that the younger authors seem to have developed Buridan's way of using medical doctrines and debates in order to solve this issue. In this section, it is my intention to give a confirmation of Jole Agrimi's intuition according to which Buridan would be the most direct 'predecessor' of a new trend characterizing the Parisian Faculty of Arts in the fourteenth century, which paid attention to the special sciences, for example medicine, in the framework of natural philosophy.[26]

Buridan's question on tempered mixture has a parallel, although in a slightly different formulation, in Nicole Oresme's commentary on *De generatione et corruptione* (*Utrum possit esse aliquod mixtum temperatum ex elementis vel qualitatibus eorum*),[27] as well as in the commentaries by Albert of Saxony (*Utrum sit dare aliquod mixtum temperatum ex elementis vel ex qualitatibus elementorum*)[28] and Marsilius of Inghen (*Utrum contingat dare mixtum temperatum ex elementis vel ex qualitatibus elementorum*).[29] The following summaries of the four *quaestiones* will help in the comparison of the texts I will soon display.

[B] John Buridan, q. II.11: Undecimo quaeritur utrum possibile sit esse aliquod mixtum simpliciter et perfecte temperatum

1. Quod sic rationes (1–5)
2. Oppositum
3. Nota: duplex possumus imaginari temperamentum, scilicet ad iustitiam et ad pondus
4. Conclusiones
   - 4.1 prima conclusio: possibile est in qualibet specie esse temperamentum ad iustitiam
     - 4.1.1 nota: hoc valde raro potest contingere

---

26 See Jole Agrimi, 'Les *Quaestiones de sensu* attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert', cit., esp. 200.

27 Nicole Oresme, *Quaestiones super* De generatione et corruptione, ed. S. Caroti, Verlag der Bayerischen Akademie der Wissenschaften, München 1996, 275–285. For an account of Oresme's q. II.13 see D. Jacquart, *La médecine médiévale dans le cadre parisien, XIV^e–XV^e siècle*, Fayard, Paris 1998, 393–396.

28 Albert of saxony, *Quaestiones in libros* De generatione et corruptione, Venezia 1505, repr. Frankfurt am Main 1970, ff. 152^vb–153^va.

29 Marsilius of Inghen, *Quaestiones in libros* De generatione et corruptione, Venezia 1505, repr. Frankfurt am Main 1970, ff. 119^vb–123^rb. For an account of Marsilius' q. II.15, see G. Zanier, 'Il problema della *complexio* e la nozione del vivente in Marsilio di Inghen', *Esercizi Filosofici/Testi*, 6 (2002), 69–77. For an account of the fourteenth-century Parisian commentaries on Aristotle's *De generatione et corruptione*, see S. Caroti, '*De generatione et corruptione*, Commentaries on Aristotle's', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 251–256.

4.1.2 nota: multi imaginantur quod huiusmodi temperamentum simpliciter perfectum non potest naturaliter durare nisi per instans. Responsio.
4.2 secunda conclusio: quantum ad duas qualitates contrarias est dare temperamentum ad pondus
4.3 tertia conclusio: non potest demonstrari quod sit dare temperamentum ad pondus quantum ad contrarietatem omnium qualitatum
5. Ad rationes (1–5)

[0] Nicole Oresme, q. II.13: Queritur tertiodecimo utrum possit esse aliquod mixtum temperatum ex elementis vel qualitatibus eorum

1. Quod sic: rationes (1–8)
2. Oppositum
3. Supponendum: qualiter elementa manent in mixto, quia non formaliter sed virtualiter
4. Sciendum: quodlibet mixtum habet unam naturalem complexionem qualitatum primarum quam sibi determinat naturaliter
5. Distinctio: quaestio potest habere duplicem intellectum

5.1 secundum temperamentum ad pondus (utrum sit aliquod mixtum temperatum ad equalitatem ipsarum qualitatum)
5.1.1 notabilia
5.1.1.1 primum sciendum: in mixto sunt qualitates similes elementis multipliciter
5.1.1.2 secundum sciendum: potest intelligi quod esset equalitas inter aliqua contraria
5.1.2 suppositiones
5.1.2.1 prima suppositio: cum pluri gravitate stat minus de qualitate activa, et e converso est de levitate
5.1.2.2 secunda suppositio: si quatuor prime qualitates essent adequate in gradibus, non propter hoc essent adequate in potentiis
5.1.2.3 tertia suppositio: si due contrarie essent adequate in hoc quod est posse agere, non tamen in hoc quod est posse resistere
5.1.3 conclusiones
5.1.3.1 prima conclusio: possibile est quod in mixto virtutes motive sint adequate
5.1.3.2 secunda conclusio: eodem modo est possibile de duabus activis
5.1.3.3 tertia conclusio: illud non potest durare per tempus
5.1.3.4 quarta conclusio: contra Commentatorem: quod si esset equaliter mixtum ex gravi et levi, illud non quiesceret ubicumque poneretur
5.1.3.5 quinta conclusio et principalis: impossibile est nec in istanti nec in tempore aliquod esse equaliter mixtum ex omnibus qualitatibus primis

5.2 secundum temperamentum ad iustitiam (utrum sit aliquod mixtum temperatum non ad equalitatem, sed ad propriam complexionem debitam in sua specie)
5.2.1 videnda
5.2.1.1 primo, videndum: si mixta diversarum specierum possunt habere consimilem dispositionem et proportionem in primis qualitatibus
5.2.1.1.1 distinctio: quedam est complexio mixti radicalis et naturalis, alia est accidentalis et extrinseca

5.2.1.1.2 sciendum: ad mutationem illius proportionis accidentalis sequitur etiam variatio complexionis naturalis
5.2.1.1.3 sciendum: mixto sub aliqua proportione stat naturaliter, sub aliqua violente, et est aliqua sub qua numquam staret
5.2.1.1.4 conclusiones
5.2.1.1.4.1 prima conclusio: cuilibet specie convenit aliqua latitudo proportionis primarum qualitatum, sub qua nulla alterius speciei naturaliter posset esse
5.2.1.1.4.2 secunda conclusio: quelibet species maiorem latitudinem sibi determinat sub qua potest stare violente quam naturaliter
5.2.1.1.4.3 tertia conclusio: duo individua diversarum specierum non possint naturaliter stare sub equali proportione, tamen possibile est quod stent sub equali et hoc quodlibet violente vel alterum tantum
5.2.1.1.5 correlarie
5.2.1.1.6 propositiones:
5.2.1.1.6.1 prima propositio: de una contrarietate primarum qualitatum sunt infinite proportiones
5.2.1.1.6.2 secunda propositio: sub quacumque istarum potest aliqua forma esse sive naturaliter sive violente
5.2.1.1.6.3 tertia propositio: non potest quecumque forma stare sub qualibet proportione nec naturaliter nec volente
5.2.1.1.6.4 quarta propositio: verisimile est quod nulla forma naturaliter stet sub proportione irrationali qualitatum, sed violente
5.2.1.1.6.5 quinta propositio: species quedam habent invicem inimicitiam naturalem vel amicitiam
5.2.1.1.6.6 sexta propositio: cum in mixto sint plures contrarietates, sunt igitur ibi plures proportiones partiales
5.2.1.2 secundo, videndum: si omnia mixta eiusdem speciei habent naturaliter et determinant sibi eandem complexionem seu proportionem, vel consimilem, vel aliam et aliam
5.2.1.2.1 conclusiones:
5.2.1.2.1.1 prima conclusio: non omnia individua eiusdem speciei determinant sibi complexionem eandem naturaliter
5.2.1.2.1.2 secunda conclusio: istarum complexionum indivisibilium quedam est peior, quedam est melior et convenientior vite
5.2.1.2.1.3 sed contra et responsio
5.2.1.2.1.4 correlarie: numquam duo omines sunt omnino similes
5.2.1.3 tertio, videndum: si idem mixtum, quamdiu durat, determinat sibi eandem complexionem vel per diversa tempora et etates modo unam deinde aliam
5.2.1.3.1 conclusio: in alia et alia etate est alia et alia complexio naturalis
5.2.1.4 quartum, videndum: si potest manere in ista optima dispositione quam sibi naturaliter determinat
5.2.1.4.1 conclusiones:

5.2.1.4.1.1 prima conclusio: sicut mixtum determinat sibi complexionem essentialem, ita determinat sibi accidentalem sibi congruam et similem essentiali
5.2.1.4.1.2 secunda conclusio: impossibile est diu dare cum utraque proportione optima et convenientissima quin sit aliquis defectus vel in parte vel in toto, et propter mutationem temporis et rerum naturalium
5.2.1.4.1.3 tertia conclusio: possibile est mixtum stare aliquando sub optima complexione essentiali sibi debita

6. Ad rationes (1–8)

[A] Albert of Saxony, q. II.11: Queritur utrum sit dare aliquod mixtum temperatum ex elementis vel ex qualitatibus elementorum

1. Quod sic: rationes (1–6)
2. Oppositum
3. Supponendum: qualiter elementa manent in mixto
4. Sciendum: quodlibet mixtum habet naturalem complexionem et proportionem qualitatum quam sibi determinat
5. Distinctio: questio potest habere duplicem intellectum
   - **5.1 secundum temperamentum ad pondus** (quod sit aliquod mixtum equaliter in elementis vel qualitatibus quod non habeat plus de una quam de alia et illud dicitur esse mixtum ad pondus)
     - 5.1.1 sciendum: in mixto sunt quedam qualitates que dicuntur qualitates alterative
     - 5.1.2 suppositiones:
       - 5.1.2.1 prima suppositio: si in mixtione esset esset tantum de gravitate sic de levitate oporteret quod ibi esset multo plus de caliditate quam de frigiditate
       - 5.1.2.2 secunda suppositio: si quatuor qualitates alterative essent equaliter in mixtio in gradibus, non propter hoc essent equaliter in mixtio in potentiis et virtutibus
       - 5.1.2.3 tertia suppositio: si duo qualitates in aliquo mixtio essent adequate in posse agere adhuc possent esse inequales in posse resistere
     - 5.1.3 conclusiones:
       - 5.1.3.1 prima conclusio: possibile est quod in mixtio qualitates motive sint equales
       - 5.1.3.2 secunda conclusio: hoc est possibile estiam de alterativis
       - 5.1.3.3 tertia conclusio: impossibile est esse aliquod mixtum equaliter ex omnibus qualitatibus motivis localiter et alterativis simul
       - 5.1.3.4 quarta conclusio: si esset aliquod mixtum ad pondus adhuc de illo falsum esset dicere quod ubicumque poneretur quiesceret
       - 5.1.3.5 quinta conclusio: etiam falsum est de tali quod esset perpetuum

   - **5.2 secundum temperamentum ad iustitiam** (mixtum temperatum ad complexionem et proportionem debitam in sua specie et illud vocaretur mixtum temperatum ad iustitiam)
     - 5.2.1 videnda
       - 5.2.1.1 primo, videndum: si mixta diversarum specierum possint habere consimilem dispositionem

5.2.1.1.1 distinctio: quedam est complexio naturalis seu radicalis ipsius mixtis. Alia est est accidentalis et extrinseca.

5.2.1.2 notabilia:

5.2.1.2.1 primum sciendum: ad mutationem illius proportionis et complexionis accidentalis sequitur etiam variatio complexionis naturalis

5.2.1.2.2 secundum sciendum: mixtum sub aliqua proportione vel dispositione stat naturaliter et sub aliqua violenter

5.2.1.3 conclusiones:

5.2.1.3.1 prima conclusio: cuilibet speciei convenit aliqua latituto proportionis primarum qualitatum sub qua nullum mixtum alterius speciei posset esse naturaliter

5.2.1.3.2 secunda conclusio: unaqueque species maiorem latitudinem sibi determinat sub qua potest stare violente quam sub qua potest stare naturaliter

5.2.1.3.3 tertia conclusio: duo individua diversarum specierum non possint simul stare sub equali proportione qualitatum primarum naturaliter, tamen quodlibet eorum potest stare sub illa violenter vel ad minus alterum horum

5.2.1.4 correlarium

5.2.1.5 propositiones:

5.2.1.5.1 prima propositio: veniendo de summo calido ad summum frigidum infinite inveniuntur proportiones quarum quedam sunt maiores, quedam minores, quedam rationabiles, quedam irrationabiles

5.2.1.5.2 secunda propositio: sub quecumque illarum proportionum potest aliqua forma esse sive naturaliter sive violenter

5.2.1.5.3 tertia propositio: non quecumque forma potest sub quacumque illarum proportionum esse naturaliter nec adhuc violenter

5.2.1.5.4 quarta propositio: bene verisimile est quod nulla forma stat naturaliter sub proportione qualitatum irrationabili

5.2.1.5.5 quinta propositio: ex hoc potest imaginari quando individua aliquarum specierum cum individuis aliarum specierum habent naturalem amicitiam ad invicem, et quando naturalem inimicitiam

5.2.1.6 secundo, videndum: si mixtum eiusdem speciei determinat sibi complexionem consimilem qualitatum primarum, vel aliam et aliam

5.2.1.6.1 conclusiones:

5.2.1.6.1.1 prima conclusio: non omnia individua eiusdem speciei determinant sibi naturaliter eandem complexionem

5.2.1.6.1.2 secunda conclusio: istarum complexionum individualium quedam est melior e convenientior vite humane et quedam peior, ideo non omnes homines aeque diu vivunt

5.2.1.6.2 correlarium: numquam duo homines sunt omnino similes

5.2.1.6.3 dubium et responsio: omnes homines sunt eiusdem speciei ergo determinant sibi consimiles proportiones. / Diversitas membrorum est propter diversitatem formarum et ideo quia media non sunt omnino consimilia et sic complexiones non sunt omnino consimiles

5.2.1.7 tertio, videndum: si mixtum quamdiu vivit determinet sibi continue eandem seu consimilem proportionem qualitatum primarum vel secundum diversa tempora viventis deu modo unam et postea aliam
5.2.1.7.1 conclusio: in alia et alia etate est alia et alia complexio naturalis
5.2.1.8 quarto, videndum: si mixtum possit manere per tempus in illa optima dispositione quam sibi determinat
5.2.1.8.1 conclusiones:
5.2.1.8.1.1 prima conclusio: sicut mixtum determinat sibi complexionem essentialem ita etiam determinat sibi complexionem accidentalem et congruam et similem sue complexioni essentiali
5.2.1.8.1.2 secunda conclusio: non impossibile est mixtum aliquando esse sub optima dispositione naturali et complexione sibi debita
5.2.1.8.1.3 tertia conclusio: impossibile est ipsum stare diu sub optima et convenientissima complexione

[M] Marsilius of Inghen, q. II.15: Queritur quintodecimo utrum contingat dare mixtum temperatum ex elementis vel ex qualitatibus elementorum

1. Quod non: rationes (1–8)
2. Oppositum
3. Distinctio: mixtum ex elementis potest intelligi dupliciter, ad pondus et ad iustitiam. Erunt in questione duo articuli
4. **Articulum primum: temperamentum ad pondus**
   - 4.1 notanda
     - 4.1.1 primo: in mixto ex elementis duplices derelinquuntur qualitates. Quedam alterative et quedam motive localiter
       - 4.1.1.1 distinctio: primus sensus questionis potest intelligi tripliciter:
         - 4.1.1.1.1 utrum sit mixtum in quo omnes qualitates huiusmodi equaliter dominentur
         - 4.1.1.1.2 si sit dare mixtum in quo omnes qualitates alterative sunt equales
         - 4.1.1.1.3 si sit dare mixtum in quo qualitates motive localiter sint adequate quicquid sit de alterativis.
     - 4.1.2 secundo: de hac materia volo loquere pure naturaliter quia quod per potentiam divinam posse esset temperatum ex elementis sive ad pondus sive aliter nullus negaret.
   - 4.2 suppositiones
     - 4.2.1 prima suppositio: si in mixto essent adequate qualitates alterative mixtum haberet multum plus de gravitate quam de levitate.
     - 4.2.2 secunda suppositio: si esset mixtum equaliter ex qualitatibus motivis ipsum esset mixtum inequaliter ex alterativis
     - 4.2.3 tertia suppositio: in aliquo mixto qualitates alterative elementorum essent adequate in gradu adhuc tamen ipse non essent adequate in virtute
     - 4.2.4 quarta suppositio: qualitates prime in mixto essent adequate in agere tamen non essent adequate in resistere

4.3 conclusiones
- 4.3.1 prima conclusio: non est possibile mixtum esse temperatum ad pondus ex elementis quo ad qualitates motivas et alterativas simul
- 4.3.2 secunda conclusio: possibile est esse mixtum temperatum quo ad qualitates alterativas tantum
- 4.3.3 tertia conclusio: possibile est esse mixtum temperatum quo ad qualitates motivas equaliter
- 4.3.4 quarta conclusio: si in mixto qualitates motive dominarentur equaliter vel ad imaginationem omnes qualitates sic quod esset simpliciter temperatum ad pondus adhuc non ubicumque poneretur quiesceret.
- 4.3.5 quinta conclusio: supposito quod esset mixtum temperatum ex elementis ipsum non esset perpetuum.

5. Articulum secundum: temperamentum ad iustitiam

5.1 videnda
- 5.1.1 primo: utrum mixta diversarum specierum possint habere eandem dispositionem et proportionem qualitatum primarum
  - 5.1.1.1 notanda
    - 5.1.1.1.1 primo: quaedam est complexio radicalis, alia est quasi accidentalis
    - 5.1.1.1.2 secundo: in complexione radicali duplices sunt qualitates, quedam sunt eductive forme, alie sunt organice, alie disponens organorum sicut in oculo figura oculi, et alie disponens que disponunt oculum ad hoc quod per ispsum fiat visio
    - 5.1.1.1.3 tertio: ad mutationem complexionis vel dispositionis accidentalis sequitur variatio complexions naturalis
    - 5.1.1.1.4 quarto: mixtum certe speciei sub aliqua dispositione stat naturaliter et sub aliqua violenter
    - 5.1.1.1.5 quinto: complexio qualitativa in materia cum agentibus univeralibus agit tantum quantum potest quia est agens naturale
  - 5.1.1.2 conclusiones
    - 5.1.1.2.1 prima conclusio: cuilibet speciei convenit aliqua latitudo proportionis qualitatum primarum sub qua nullum mixtum alterius speciei naturaliter posset esse
    - 5.1.1.2.2 secunda conlcusio: unaqueque species determinat sibi maiorem latitudinem sub qua potest stare violenter quam sub qua potest stare naturaliter
    - 5.1.1.2.3 tertia conclusio: dato individuo certe speciei, ut terra ipsa sub dispositione qualitativa minus conveniente potest permanere quam ipsum potest generari
    - 5.1.1.2.4 quarta conclusio: plura individua diversarum specierum possunt sub eadem vel sub simili dispositione qualitativa remanere violenter
    - 5.1.1.2.5 quinta conclusio: veniendo de summo calido et summo sicco ad summum frigidum et summum humidum infinite sunt proportiones medie quarum quedam sunt maiores et quedam minores, quedam rationales, quedam irrationales
    - 5.1.1.2.6 sexta conclusio: sub qualibet illarum proportiunum potest esse aliqua forma vel naturaliter vel violenter

5.1.1.2.7 septima conclusio: nulla forma substantialis sub quale illarum dispositionum potest esse naturaliter vel etiam violenter
5.1.1.2.8 octava conclusio: verisimile est quod nulla forma stat naturaliter sub proportione irrationali qualitatum
5.1.1.2.9 nona conclusio: forme diversarum specierum bene possunt esse naturaliter sub eadem vel simili dispositione qualitativa organica

5.1.2 secundo: utrum mixta eiusdem speciei possint manere sub et alia qualitatum primarum dispositione et complexione
5.1.2.1 conclusiones
5.1.2.1.1 prima conclusio: non omnia individua eiusdem speciei determinant sibi naturaliter eandem complexionem
5.1.2.1.2 secunda conclusio: omnium illarum complexionum uni speciei convenienti naturaliter est talis unio quod nullius alterius speciei individuum sub tali aliqua staret naturaliter
5.1.2.1.3 tertia conclusio: non omnium membrorum eiusdem individui est simili complexio
5.1.2.1.4 quarta conclusio: eiusdem forme extense sicut est anima bovis omnes partes differunt inter se solum numero essentialiter
5.1.2.1.4.1 correlarium
5.1.2.1.4.2 contra conclusionem quartam (rationes 1–3) et responsio (ad rationes 1–3)

5.1.3 tertio: utrum viventium quamdiu vivit semper sibi determinet similem vel eandem dispositionem seu complexionem vel potius secundum diversitatem viventis vel senectutis determinet sibi complexionem aliam vel aliam (utrum in qualibet etatum homo sit eiusdem complexionis)
5.1.3.1 notanda
5.1.3.1.1 primo: medici ponunt hominis septem etates (infantia, pueritia, adolescentia, iuventus, etas virilis, senectus, etas decrepiti)
5.1.3.1.2 secundo: he assignationes ut in pluribus tenent non tamen sunt punctuales
5.1.3.2 conclusio: in diversis etatibus eiusdem viventis est alia et alia complexio

5.1.4 quarto: **Utrum caliditas fortior est in pueritia quam in iuventute**
5.1.4.1 calor iuvenis est fortior: rationes (1–4)
5.1.4.2 oppositum: calor pueri est fortior: rationes (1–10)
5.1.4.3 calor est equalis: (conclusiones 1–2; contra istam opinionem 1–2)
5.1.4.4 notanda (1–3)
5.1.4.5 conclusiones (1–4)
5.1.4.6 ad rationes (1–10)

5.1.5 quinto: si mixtum per aliquod tempus posset esse vel manere sub optima complexione sive speciei determinata (utrum sit possibile esse mixtum temperatum ad iustitiam)
5.1.5.1 conclusiones

5.1.5.1.1 prima conclusio: tam philosophi quam medici dicunt quod possibile sit esse mixtum temperatum ad iustitiam
5.1.5.1.2 secunda conclusio: sicut mixtum determinat sibi complexionem essentialem sibi congruam ita determinat accidentalem sibi congruam
5.1.5.1.3 tertia conclusio: mixtum sub utraque earum optima dispositione impossibile est diu permanere
5.1.5.1.4 quarta conclusio: possibile est stare mixtum aliquo tempore parvo sub complexione temperata ad iustitiam
5.1.5.2 dubia (1–3)
5.1.5.3 suppositiones (1–4)
5.1.5.4 conclusiones
5.1.5.4.1 prima conclusio: si in homine esset complexio optima seu temperata ad iustitiam illa nullo toto tempore remaneret
5.1.5.4.2 secunda conclusio: non est possibile esse hominem temperatum ad iustitiam per naturam

6. Ad rationes (1–8)

The first thing to notice is that the questions of Oresme, Albert and Marsilius discuss more (sub-) topics and contain more structural elements than that of Buridan. Marsilius' text is evidently more structured also than Oresme and Albert of Saxony's ones. This difference in terms of structure is a first possible clue that Buridan's text contains *in nuce* what the younger scholars further developed. Buridan's question is in fact significantly simpler than that of the others. As already described, Buridan first gives a series of arguments in favor of an affirmative answer to the question [[B] 1], and, second, presents the opposite view [[B] 2]; then, he introduces the important medical distinction between *temperamentum ad pondus* and *temperamentum ad iustitiam* [[B] 3], and makes use of this distinction to formulate and substantiate three claims [[B] 4.1, 4.2, 4.3], the most important of which is the first one [[B] 4.1]: a mixture can be tempered only if considered as tempered *ad iustitiam*, and, also in this case, the proper conditions for a balanced complexion to obtain are rare and only transitory. The question then closes with a set of replies to the initial arguments [[B] 5].

Oresme, Albert of Saxony and Marsilius, on the other hand, take as their point of departure Buridan's introduction of the medical concept of 'complexion' and the distinction between *temperamentum ad pondus* and *temperamentum ad iustitiam*, but build a much more elaborated *quaestio* neatly divided into two parts. According to them, the issue of the possibility of a tempered mixture can be approached in two ways: considering the mixture (1) *secundum temperamentum ad pondus*, and (2) *secundum temperamentum ad iustitiam* [[O] 5, [A] 5, [M] 3]. They then present two long sections

analysing in detail whether and how it can be possible to have a tempered mixture in the first (1) [[O] 5.1, [A], 5.1, [M] 4]] and in the second (2) sense [[O] 5.2, [A] 5.2, [M] 5] of *temperamentum*.

The three Parisian *magistri* first face the question from the perspective of the *temperamentum ad pondus* (1). They analyze different possible cases in which qualities can be balanced *ad pondus* (i.e., 'adequate') in a mixture [[O] 5.1.2, [A] 5.1.2, [M] 4.2], thus proposing a refined reflection on the relations between qualities that was only sketched out by Buridan. All three authors reach the conclusion that a mixture tempered *ad pondus* cannot last for a long time and that it is impossible to have a perfectly balanced mixture of all primary qualities [[O] 5.1.3.2 and 5.1.3.5, [A] 5.1.3.3 and 5.1.3.5, [M] 4.3.1 and 4.3.5].

The second part (2) is devoted to the mixture taken as tempered *ad iustitiam* [[O] 5.2, [A] 5.2, [M] 5]. The three authors further divide this section into four subsections. They ask in particular (a) whether mixtures of different species can have a similar disposition and proportion of qualities [[O] 5.2.1.1, [A] 5.2.1.1, [M] 5.1.1]; (b) whether mixtures of different individuals belonging to the same species can have a similar complexion of primary qualities [[O] 5.2.1.2, [A] 5.2.1.2, [M] 5.1.2]; (c) whether the complexion of the mixture remains the same all along the different ages of life [[O] 5.2.1.3, [A] 5.2.1.3, [M] 5.1.3]; and (d) whether the mixture can remain in the good complexion, i.e., tempered *ad iustitiam* [[O] 5.2.1.4, [A] 5.2.1.4, [M] 5.1.5]. To this set of questions, Marsilius adds a fifth section (the fourth in his division of the text, [[M] 5.1.4]) in which he asks whether heat is stronger in childhood than in youth. This question constitutes a *quaestio* in its own right inserted into the main question on the tempered mixture, and it is indicated as a separate question in the index of the edition. In this part of his text, Marsilius extends the issues of tempered mixture and complexion to the medical topic of the *humidum radicale*,[30] a core concept for the medical description of the life of a living organism.[31]

The three *magistri* (i.e., Oresme, Albert, and Marsilius) discuss the four questions (a-d) in almost identical ways, by introducing the same distinctions, notes, definitions, and conclusions, although sometimes Marsilius' text is more detailed than that of the others. They answer question (a) by stating that individuals of two different species (for example an individual human being and an individual dog) cannot be *naturaliter*

30 For the issue of natural heat and *humidum radicale* in Marsilius' q. II.15 see G. Zanier, op. cit., 73–75.

31 See the following section of this thesis, in which I will address Buridan's use of the concept of radical moisture. See *infra*, 000.

characterized by the same complexion [[O] 5.2.1.1.4.3, [A] 5.2.1.3.3, [M] 5.1.1.2.4]. Neither do (b) individuals of the same species (for example Francesco Totti and Daniele De Rossi) *naturaliter* have the same complexion: among individual complexions in a same species, some are well adapted and some others are less well adapted to life; as a result, human life does not have a standard time of duration [[O] 5.2.1.2.1, [A] 5.2.1.6.1, [M] 5.1.2.1]. Third (c), natural complexion varies according to the ages of life [[O] 5.2.1.3.1, [A] 5.2.1.7.1, [M] 5.1.3.2]. In other words, the complexion of six years old Anna is not the same as that of ninety-five years old Liberata. Question (d) is the most important one, because it asks about the possibility of a complexion *temperata ad iustitiam*. The respective answers given by our three authors are all very similar to each other and reflect Buridan's opinion: a complexion *temperata ad iustitiam* is possible; nevertheless, it is difficult for it to obtain and it cannot last for a long time. Hence, all three scholars are cautious about the possibility of a tempered complexion, even about a complexion *temperata ad iustitiam* [[O] 5.2.1.4.1, [A] 5.2.1.8.1, [M] 5.1.5.1]. Marsilius is the most cautious of the three; having presented the same conclusions as Oresme and Albert of Saxony, he opens a final section in which he underlines his prudence: by using a conditional form ('si esset … remaneret'), he first concludes that, also supposing the case that a tempered complexion is given in human beings, it cannot remain tempered all the time [[M] 5.1.5.4.1]; second, he claims that a human being *temperatum ad iustitiam per naturam* cannot exist [[M] 5.1.5.4.2]. Also in this second part of their respective questions, on the *temperamentum ad iustitiam*, Oresme, Albert, and Marsilius, while reaching the same conclusion as Buridan, broaden Buridan's discussion by formulating a set of specific questions and by introducing reflections – e.g., on the relations between and within species – that were only sketched out in Buridan's question.

From the previous structural comparison, it emerges that it is likely that Oresme, Albert of Saxony, and Marsilius based their respective *quaestiones* about tempered mixture on Buridan's model. These authors seem to have taken Buridan's text as their point of departure: they answer the question on tempered mixture by introducing the medical concept of complexion and the medical distinction between *temperamentum ad pondus* and *temperamentum ad iustitiam*, and they reach the same main conclusions as Buridan. In addition, they further enrich Buridan's model by presenting a more systematic reflection, and by introducing issues Buridan does not examine in depth or does not analyze at all. We can even perceive three consecutive phases of the development: Buridan's text, second Oresme and Albert's adaptation and enlargement of Buridan's text, third Marsilius' more elaborate reflections including an additional medical topic, namely the one on natural heat and *humidum radicale*.

To conclude, this case study constitutes an example of Buridan's influence on other fourteenth-century Parisian *magistri* in the treatment of the topic of complexion, with the help of medical doctrines. Buridan's contemporaries and quasi-contemporaries in Paris seem then to have been inspired by Buridan's way of integrating medicine in his discussions of natural philosophical issues. Further research can confirm the outcomes of this case study on complexion. Moreover, additional research should be done on previous commentaries on the D*e generatione et corruptione* written at the Parisian Faculty of Arts to see whether and to what extent questions on the perfectly tempered mixture included medical ideas and influences.

4.2.1.2. Complexions and Humors

The concept of 'complexion' can also be found in Buridan's commentary on D*e longitudine et brevitate vitae* (q. 5)[32] and in his *Quaestiones de secretis mulierum* (q. 8).[33] In both cases, complexion is connected with the theory of humors.

4.2.1.2.1. Complexion and Life Expectancy

In Buridan's commentary on Aristotle's D*e longitudine et brevitate vitae* one question is entirely devoted to the topic of complexion. The relevant question asks which complexion among sanguine, choleric, phlegmatic, and melancholic offers the longest life expectancy to living organisms (*Quaeritur quae complexio sit longioris vitae*).[34]

Buridan starts by presenting the characteristics of the four kinds of complexion underlining both their best and worst aspects.

1. A sanguine complexion (*complexio sanguinea*) provides the longest life because is hot and humid, qualities that are generally recognized to be the causes of life. This complexion can resist both kinds of death that can affect an organism, namely the *marcedo* and the *exstinctio*. In the death called '*marcedo*', the humidity is consumed by the heat; in the death called '*exstinctio*', the heat itself is consumed by its contrary, i.e. coldness. In the first case, i. e., *marcedo*, the heat does not consume the moisture too fast because the organism has a good quantity of humidity. In

32 In my exposition, I am following the edition of Buridan's *Parva naturalia* prepared by M. Stanek.

33 See E, q. 8, esp. 1–19.

34 'Quinto quaeritur: quaestio est quae complexio sit longioris vitae, supposito quod sint quattuor complexiones communiter distinctae (dividentae *ed.*) a naturalibus et medicis, scilicet sanguinea, quae est calida et humida; cholerica, quae est calida et sicca; phlegmatica, quae est humida et frigida; melancholica, quae est frigida et sicca'. See PN*ms*, D*e longitudine et brevitate vitae*, q. 5, ll. 3–9, 236.

the second case, i. e. *exstinctio*, on the contrary, the heat suffices to be very slowly consumed by its contrary quality. On the other hand, a sanguine complexion, being hot and humid, is aerial, hence strongly alterable; moreover, heat and humidity are the principles of putrefaction, so that sanguine complexion is easily corruptible.[35]

2. With respect to a choleric complexion (*complexio cholerica*), which is hot and dry, Buridan argues on the one hand that it is considered the longest one because it can be assimilated to the complexion of fire, which is less affected by putrefaction than the other elements. In addition, fire is also the noblest element, and the noblest complexion is rightly considered the longest. Moreover, the heart is a choleric organ; in fact, it is hotter and drier than the other organs. But the heart is the first member to be formed and the last member to die. Hence the choleric complexion, which characterizes the heart, must be the longest one. On the other hand, being hot and dry, a choleric complexion possesses a high degree of heat but insufficient humidity. As soon as the heat consumes the humidity, death, in terms of *marcedo*, occurs.[36]

---

35 'Arguitur primo quod sanguinea sit longioris vitae, quia habundat in ea calidum et humidum, quae sunt causae longae vitae, ut dicitur in isto libro. Item: duplex est mors sive corruptio vitae. Una vocatur marcedo, alia vocatur exstinctio, ut dicitur in libro *De morte et vita*. Marcedo autem fit per hoc quod humidum naturale consumitur a calido. Et huic corruptioni resistit humidum habundans, quia non cito consumitur. Exstinctio autem est, si calidum naturale a contrario corrumpatur. Et huic corruptioni sive morti resistit calidum habundans. Igitur complexio sanguinea, in qua habundat calidum et humidum, maxime resistit utrique morti; igitur ipsa debet esse longioris vitae. Sed contra hoc arguitur, quia complexio, cum sit calida et humida, est similis complexioni aeris. Modo aer est valde passibilis inter cetera elementa. Ergo complexio sanguinea inter ceteras complexiones est magis passibilis, et per consequens cito corruptibilis et parvi vitae. Item: calidum et humidum sunt causae putrefactionis, et per consequens corruptionis mixtorum; ergo complexio calida et humida debet esse cito corruptibilis'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 9–32, 236–237.

36 'Deinde arguitur quod complexio cholerica debet esse longioris vitae, quia assimilatur (assimilat *ed.*) complexioni ignis. Igitur est inter cetera minus putrefactibilis, quia, ut dicit Aristoteles, ignis minime est putrefactibilis. Item: nobilior complexio debet esse longioris durationis. Et complexio cholerica est inter ceteras nobilior, quia est de complexione ignis. Et ignis est nobilissimum elementorum. Igitur etc. Item: cor, in comparatione ad alia membra, est cholericum, quia inter cetera membra est magis calidum et siccum. Et tamen cor inter cetera membra est longioris vitae, quia primo vivit et ultimo moritur, ut habetur in *De partibus animalium*. Igitur etc. Sed contra hoc arguitur, quia in complexione cholerica est multum calidum et paucum humidum. Modo paucum humidum a multo calido cito consumitur, et sic provenit mors, quae vocatur marcedo. Ideo talis complexio debet esse brevis vitae'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 33–40, 237.

3. The phlegmatic complexion (*complexio flegmatica*) is very humid and hardly hot. For this reason, the moisture is consumed more slowly by the heat than in the other cases. At the same time, the heat is so feeble that the complexion cannot be the longest one. Buridan gives the following example: women, being cold and humid, are more phlegmatic than men and have a shorter life than they have.[37]
4. Finally, the melancholic complexion (*complexio melancolica*) is cold and dry. Exactly for this reason, it is the most compact and resistant, like stones. And stones, which, being cold and dry, can be considered as melancholic, are very durable entities. Moreover, plants are considered melancholic compared to animals (in the sense that they are colder and dryer), and several plants have a longer life than animals. Nevertheless, a melancholic complexion completely lacks heat and humidity, which are the principles of life. Rather, it is characterized by coldness and dryness, which are the principles of ageing and death.[38]

As a matter of fact, when reading this list of pros and cons, it seems to be impossible to determine which of the four complexions makes for the longest life expectancy. Hence it does not come as a surprise that Buridan introduces the section devoted to the solution of the *quaestio* by stating 'ista quaestio est valde difficilis'.[39]

---

37 'Deinde arguitur quod complexio phlegmatica sit longioris vitae, quia habet multum humidum et paucum calidum, et ita tardius humidum consumptum est a calido et inde non provenit mors naturalis nisi per consumptionem humidi naturalis a calido, licet alio modo proveniat mors violenta, ut dicetur in libro *De morte et vita*. Item: in phlegmaticis habundat magis multa pinguedo quam in aliis complexionibus. Et tamen dicit quod humidum ⟨quod CB⟩ est causa longae vitae oportet ipsum esse pingue, igitur etc. Contra hoc arguitur, quia calidum, quod est causa longae vitae, oportet esse multum, ut dicit Aristoteles in isto libro. Et in phlegmatico non est calidum multum, immo deficiens. Igitur etc. Item: dicit Aristoteles quod communiter femellae sunt brevioris vitae masculis. Et tamen femellae respectu masculorum dicuntur phlegmaticae, quia sunt humidiores et frigidiores masculis'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 41–54, 237–238.

38 'Deinde arguitur quod complexio melancholica sit longioris vite, quia frigidum et siccum sunt fortissimae coagulationis et maximae resistentiae, ideo cum difficultate corrumpuntur, ut lateres et lapides, et huiusmodi. Modo complexio melancholica est frigida et sicca, igitur etc. Item: plantae ad animalia reputantur melancholicae complexionis, quia sunt magis frigidae et magis siccae quam animalia. Et tamen plantae multae sunt longioris vitae quam animalia. Igitur. Sed contra hoc arguitur, quia in complexione melancholica deficiunt ambo principia longae vitae, scilicet calidum et humidum, et habundant principia mortis et senectutis, scilicet frigidum et siccum. Ergo ista complexio debet esse brevissimae (breve *ed.*) vitae'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 55–65, 238.

39 See PN*ms*, *De longitudine et brevitate vitae*, q. 5, l. 67, 239.

Buridan starts by introducing the same distinction he also presents in his commentary on *De generatione et corruptione*, i.e., a distinction between a *temperamentum ad pondus* and a *temperamentum ad iustitiam*.[40] The *temperamentum ad pondus*, he explains, obtains between two contrary qualities. For example, the *temperamentum ad pondus* between the contrary qualities of 'most hot' (*calidissimum*) and 'most cold' (*frigidissimum*) is the quality of 'tepid' (*tempidum*).[41] The *temperamentum ad iustitiam*, on the other hand, refers to the qualities conveniently disposed to allow vital operations in living organisms. Each species has its own proper *temperamentum ad iustitiam*: human beings, fish, and worms have different kinds of *temperamentum ad iustitiam* because their vital operations require different proportions of qualities. Also different organs in individuals of the same species present different *temperamenta ad iustitiam*.[42]

---

40 'Et propter hoc iuvenes medici imaginantur duplex temperamentum et imponunt nomina ad placitum valde impropria. Ponunt enim temperamentum ad pondus et temperamentum ad iustitiam'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. *68–71*, *239*. My first impression is that the word 'iuvenes' sounds inappropriate here. In fact, the distinction between *temperamentum ad pondus* and *temperamentum ad iustitiam* was typical of the medical tradition in general (See *supra*, footnote *6*), and not necessarily specific to some supposed young physicians in particular. Therefore, Stanek's quotation from Peter of Abano's *differentiae* 16–18 in the references of his edition does not seem to me that relevant. I would follow the text as in mss. S, V and W, which has 'Unde medici imaginantur duplex temperamentum et imponunt nomina ad placitum valde impropria'.

41 'Temperamentum ad pondus inter duas contrarias qualitates, si simul sint tot gradus de una sicut de alia, sicut esset tepidum, quod esset bene medium inter calidissimum et frigidissimum, ita quod aequaliter haberet de gradibus caliditatis et de gradibus frigidatis. Et ita esset imaginandum de humido et sicco, et de aliis qualitatibus contrariis'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. *72–76*, *239–240*.

42 'Sed temperamentum ad iustitiam vocatur, quando qualitates contrariae secundum gradus earum sunt in aliquo optime proportionato et ad exercendum opera naturalia et convenientia illius. Et *sic manifestum est quod complexio esset temperata in homine, quod similis non esset temperata in pisce vel in verme, quia ad exercendum debitas operationes hominis requiritur in homine valde maior caliditas quam in pisce vel in verme ad exercendum debitas operationes vermis vel piscis, immo piscis vel vermis non duraret*, sed statim moreretur. Immo etiam de hoc notandum est quod in eodem animali, ut in homine, est aliud temperamentum ad iustitiam in corde et aliud in cerebro. Unde si in cerebro habundaret tantus calor sicut in corde, cerebrum non posset exercere operationes sibi debitas, immo corrumperetur, et ita corrumperetur cor, si esset tantae frigiditatis sicut cerebrum'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. *76–89*, *240*. I report the sentence marked above in italics as it is in the version of manuscript V, since the grammar in V seems to work better 'Et sic manifestum est quod una complexio esset temperata in homine et quod consimilis non esset temperata in pisce vel in verme, quia certe ad exercendum debitas operationes hominis requiritur in homine valde maior caliditas quam in pisce vel in verme …'. See ms. Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 11.575 (V), 120$^{va–vb}$.

However, unexpectedly, Buridan qualifies the terms '*temperamentum ad pondus*' and '*temperamentum ad iustitiam*' as 'improper' names given by physicians to these two imaginary temperaments.[43] The attitude he takes in the remaining part of the quaestion explains Buridan's stance. Going further than the commentary on *De generation et corruptione*, and dealing here with a more strictly biological topic (the length of life), Buridan, in his commentary on the *Parva naturalia*, stresses a description of living beings which he grounds on an even more comparative and relational concept of complexion. This comparative and relational concept of complexion makes it possible to describe living organisms as they actually are in nature: complexions must not be described as standards of mixed qualities, but as very particular blends proper to singular organisms and organs, in a variety of particular situations.

In the *Parva naturalia*, Buridan prefers to work with the concept of '*complexio lapsa*', a not-tempered complexion that *always* departs, in some respects, from the tempered complexion (considered here as a supposed perfect standard that is unrealizable in nature). Moreover, in nature, we deal with complexions that are '*respectivae*'. This means that we must always compare a complexion not only to the tempered complexion (i.e. to the model of perfection), but also to the complexion of another species or another organ.[44] In general, when evaluating a complexion, we have to consider which (natural) conditions can affect a particular organism and influence its equilibrium. This will especially come to light from the remaining part of Buridan's text.

---

43 See *supra*, footnote 40.

44 'Modo ergo ad propositum sciendum est quod aliquando complexiones non dicuntur simpliciter et absolute, sed magis respective. Et non debet intelligi quod aliqua complexio vocetur omnino simpliciter et absolute phlegmatica et sanguinea, quia qualibet istarum sic vocatur in respectu temperamenti existenter vel imaginarie. Tamen ista complexio vocatur sic quae solum dicitur laxa in respectu temperamenti ad iustitiam. Sed complexio vocatur respectiva, quae non solum dicetur in respectu illius temperamenti, sed in respectu unius speciei ad aliam speciem vel unius membri ad aliud membrum'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 90–98, 240–241. The edited text has 'laxa'; in the Lokert edition, in ms. S and in ms. V (although this last is not mentioned by Stanek in the apparatus), we find 'lapsa'. *Laxa* and *lapsa* are different words, with slightly different meanings: 'laxa' indicates something loosened, while 'lapsa' properly indicates a fall or slipping from something. Nevertheless, both words are equally apt to describe what Buridan is reporting here: the relationship between a perfectly tempered complexion, impossible in nature, and some real natural states in which the complexions depart from the tempered complexion. In my exposition of Buridan's text, I opt for the word 'lapsa' because it is precisely the word we find in the texts by two Parisian physicians, Pierre de Saint-Flour and Jacques Despars. See *infra*, 153–155.

Therefore, going on with his text, Buridan proceeds to answer the question of which complexion guarantees the longest life by using the concept of 'complexio lapsa' and by considering the *complexio sanguinea*, *cholerica*, *flegmatica*, and *melancolica* as *complexiones lapsae*.

First, he introduces a link between the nobility of a certain complexion and its length: the nobler the complexion, the longer it lasts. Hence, by shifting the question to the prerogative of nobility, Buridan shows how it would be possible to solve the problem of which complexion guarantees the longest life. The noblest complexion is the *complexio temperata*: in fact, entailing a perfect balance of elements and providing the best possible conditions to accomplish life operations, it theoretically makes it possible for the various vital functions of species, individual organisms, and bodily organs to be carried out perfectly.[45] But again Buridan is not interested in this kind of unobtainable complexion:[46] the tempered complexion is in fact an ideal state, which is unrealizable. He is interested in the *complexiones lapsae*, the only kind of complexion that effectively characterizes living beings. Among the *complexiones lapsae*, Buridan explains, the noblest one will be the complexion that is the closest to, or the least far from, the tempered complexion.[47] The question then is the following: if we imagine the four *complexiones lapsae* as equally far from the tempered complexion (he writes '... *aeque* recedant a temperamento ...'), which one among them should be considered the noblest?[48] For the reasons he previously listed, Buridan considers the *complexio sanguinea* the noblest complexion: this complexion, in fact, is characterized by the qualities hot and humid (which are the principles of life), and it lacks coldness and dryness (which are the principles of old age and death).[49] Likewise,

45 'Tunc illud notanter debetis scire quod multi imaginati sunt quod complexio nobilior debet esse longioris vitae. Propter quod primo videndum est quae complexio sit nobilior. Et statim apparet quod in qualibet specie complexionis temperata esset nobilissima ...'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 111–114, 241.

46 Buridan refers to the *complexio temperata* with the wording 'si esset dare talem'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 114, 241.

47 'Secundo statim videtur consequenter quod inter complexiones laxas illa esset nobilior quae magis accederet ad temperamentum vel minus recederet a temperamento'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 120–122, 241.

48 'Sed ponamus quod quattuor complexiones laxae praedictae aeque recedant a temperamento. Quaeritur quae erit nobilior'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 122–123, 241.

49 'Et ad hoc credo esse respondendum quod ceteris paribus sanguinea esset nobilior, quia melius esset principia vitae habundare quam deficere, et etiam melius esset principia mortis deficere quam habundare. Modo sanguinea habundat in calido et in humido, quae sunt principia vitae, et deficit in frigido et sicco, quae sunt principia senectutis et mortis'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 123–128, 241–242.

he considers the *complexio melancolica* to be the worst for its contrary qualities.[50] Third, the choleric complexion is nobler than the phlegmatic complexion. In fact, the choleric complexion is hotter and less humid than the phlegmatic complexion. And heat is nobler than humidity: heat is in fact an active quality, whereas humidity is a passive quality, because heat consumes humidity.[51]

However, Buridan is still not satisfied by this solution. Therefore, he introduces a long digression aimed at describing, more in detail, what concretely happens in nature to living beings. The previous comparison between *complexiones lapsae* only works if those complexions are considered '*ceteris paribus*', i.e., as if all the possible factors that can affect an organism (and then change its complexion) are the same. This is also what Buridan meant previously with the phrase '... *aeque* recedant a temperamento ...'.[52] In nature, many causes affect the hypothetical comparison between complexions, and it can happen that a melancholic complexion turns out to be nobler and longer than a sanguine complexion.[53] To clarify this point, Buridan lists the following three causes: (1) bad secondary qualities bearing diseases acquired in different moments of life (in youth, from parents) and for many different reasons (actions of celestial bodies, fast acquisition of food during the gestation or in childhood); (2) a lack of proportion between corporeal members from a qualitative point of view, which is not convenient for the balance between the corporeal members (as Buridan explains, it often happens that the heart is sanguine, the liver phlegmatic, and the brain choleric); (3) a lack of proportion between corporeal members concerning quantity and shape, and also due

50 'Et proportionabiliter probaretur quod ceteris paribus complexio melancholica est aegrens et inter ceteras minus bona propter hoc quod in ea habundat frigidum et siccum, quae sunt principia mortis, et deficiunt calidum et humidum, quae sunt principia vitae'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 128–132, 242.

51 'Sed de comparatione cholericae ad phlegmaticam credendum est quod cholerica sit melior et nobilior, quia caliditas in vivente est nobilior quam humiditas, quia caliditas est magis activa, humiditas magis passiva. Immo vita consistit principaliter in calido et requiritur humiditas pinguis ad nutritionem caloris. Ideo caliditas est principalior humiditate. Modo caliditas habundat in cholerico et deficit in phlegmatico, humiditas autem habundat in phlegmatico et deficit in cholerico. Ergo cholerica complexio est nobilior'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 133–139, 242. Buridan here points out the nobility of heat over humidity on the basis of metaphysical presuppositions: activity and passivity are mentioned as reasons to argue for nobility. However, Buridan also mentions the natural philosophical basis, or the biological example, for this: life consists primarily of heat, which requires (and uses) the humidity to feed that heat.

52 'Et istae complexiones, sicut tetigi, debent intelligi ceteris paribus ...' See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 140, 242.

53 '... quia si cetera non sunt paria, possibile est quod aliqua melancholica sit aliqua sanguinea multo nobilior propter plures casus.' See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 140–142, 242.

to the imperfection of certain members.[54] For example, a human being with a sanguine complexion is longer-lived than human beings with other types of complexion *only in theory*. For, the theoretical assumption falls apart if he inherited a genetic malady or were affected by a disease derived from some dangerous conditions during the gestation; in the same way, his life expectancy would be shorter if his organs presented an excessive difference in complexions between themselves so lacking harmony in accomplishing the various vital functions, or if he had an imperfectly functioning bodily member. These scenarios demonstrate the necessity of the concept of '*complexio respectiva*' for understanding what happens in nature.

Furthermore, Buridan introduces a note aimed at revising the idea that the noblest complexion is also the longest one. In fact, by comparing different species (my example: man and trees), we acknowledge that some species (man) have shorter lives even though their complexions are nobler.[55] This, Buridan specifies, does not apply to living beings of the same species (for example two human beings or two mice). In this case, in fact, the noblest complexion (namely the sanguine complexion) is usually (*communiter*) also the longest.[56] Nevertheless, the adverb 'usually' plays an important role here. In fact, it often happens that infirm people live longer than healthy people

54 'Unus casus est propter aliquas qualitates secundas ineptas vel aegritudinales contractas in iuventute aut a parentibus, vel a corporibus caelestibus, aut ab aliquibus accidentibus contrarientibus cum natura agente in generatione, aut forte per raptum nutrimentum sive in matrice, sive in infantia, sive in similibus. Alius casus est propter improportionem membrorum in complexione qualificativa, quia saepe contingit cor esse sanguineum et hepar forte phlegmaticum, et cerebrum cholericum. Et tunc non est conveniens harmonia membrorum. Alius est casus propter improportionem membrorum in quantitate vel figura, vel etiam propter malitiam aut imperfectionem alicuius membri, a quo tandem totum corpus inficitur'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 143–154, 242–243.

55 'Sed de longitudine et brevitate vitae dicendum est primo quod non oportet principaliter nobiliorem complexionem esse longioris vitae, quia homines sunt nobilioris complexionis quam corvi aut cervi. Et tamen dicitur, quod sint brevioris vitae. Equi etiam et canes sunt nobilioris complexionis quam plantae, licet multae plantae sunt longioris vitae. Unde quamvis ceteris paribus sit melius et nobilius longe vivere (I prefer the text as in mss. KP; the edition has instead: 'longiori (?) te vivere quam breviori (?)' CB), tamen melius est et nobilius modico tempore bene vivere et operationes nobiliores exercere quam multo tempore facere contraria. Unde nobilius esset una hora vivere humana et intellectuali vita quam centum annis vita asinina et bestialia'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 156–165, 243.

56 'Postea videtur mihi dicendum (dividendum *ed.*) quod in eadem specie complexio nobilior et melior est communiter longioris vitae et temperata esset longissima (longissimae *ed.*), quia esset sufficientis caliditatis et non excessive, et etiam sufficientis humiditatis et non excessive. Modo ista spectant ad longam vitam, excessus et defectus ad brevem, ut dicit Aristoteles'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 166–170, 243.

do, and this is because of the causes previously listed: bad secondary qualities received at birth, a lack of proportion between qualities or corporeal members, etc.[57]

To summarize, in his question on which complexion provides the longest life expectancy to organisms, Buridan develops a comparative and relational concept of 'complexion' that goes even further than the one he uses in his commentary on D*e generatione et corruptione*. First, he introduces the common medical distinction between *complexio temperata ad pondus* and *complexio temperata ad iustitiam*, and refers to these labels as 'improper'. He wants to show that, in order to give a reliable account of how nature works, it is necessary to overcome conceptual models of complexion that do not adequately apply to real beings. He wants to stress that another kind of complexion exists in nature: a *complexio lapsa*, which always has a certain distance from the ideally tempered complexion. Buridan identifies a hierarchy between the *complexiones lapsae* considered to be equally far from the tempered complexion, but he ultimately suggests that an absolute hierarchy between the *complexiones lapsae* cannot be fixed because, in every instance, one should consider anew the singular conditions of particular organisms and their organs.

The idea of a comparative and relational complexion was the mainstream view of the physicians – both Italian and French – of the late Middle Ages.[58] In Paris, Pierre de Saint-Flour, a physician contemporary to Buridan, proposed in his *Colliget florum medicinae* a classification of the different types of complexion. He explained that the tempered complexion can be said 'per intellectum' (i.e., *ad pondus*) and 'realis' (i.e., *ad iustitiam*), and rejected the possibility of the first one. The *complexio realis* is then further divided into three categories, based on its application to species, individual organisms, and bodily parts. Moreover, Pierre de Saint-Flour distinguished the tempered complexion from the *complexio lapsa*, i.e., a not-tempered complexion that deviates from the perfectly balanced complexion.[59]

Jacques Despars' account of the concept of complexion in his commentary on Avicenna's *Canon* is even more interesting in relation to Buridan's text because

57 'Sed non valet ita dicere universaliter nisi ceteris paribus. Unde complexio sana, secundum quam bene exercemus operationes sensuales et intellectuales, est nobilior aegritudinali. Et tamen multos aegrotantes videmus longe vivere et aliquos sanos et fortes citius mori vel propter qualitates secundas (duas *ed.*) contractas in nativitate, sicut ante dictum est, vel propter aliquas improportiones qualitatum aut membrorum'. See PN*ms*, *De longitudine et brevitate vitae*, q. 5, ll. 170–176, 243–244.

58 See P.-G. Ottosson, op. cit., 133–154 and J. Kaye, op. cit., 205–210 for the Italian side. For the French side, I base the following exposition of the views of Pierre de Saint-Flour and Jacques Despars on D. Jacquart, *La médecine médiévale dans le cadre parisien, XIV^e^–XV^e^ siècle*, Fayard, Paris 1998, 391–402.

59 For Pierre de Saint-Flour, I just followed Jacquart's account. See the footnote here above.

it overlaps in many respects with Buridan's ideas. Jacques Despars was a Parisian physician who taught in the Faculty of Medicine a few decades after Buridan's presence at the Parisian Faculty of Arts. Despars' text is important in sofar as it reveals that Buridan knows and presents in his text a medical conception of complexion probably shared by members of the Parisian Faculty of Medicine, a conception that later arrived to Despars. First, Despars does not devote any thorough discussion to the concept of '*complexio temperata ad pondus*', which he considers far from any possible occurrence in nature. Second, he emphasizes that, in human beings, it is difficult to find something more balanced than the four *complexiones lapsae*. Third, in his question *Quae complexionum habet terminum longeviorum* (book 1, fen. 1, doctrine 3, chapter 3 'De complexionibus aetatum'), he discusses the problem of the hierarchy between temperaments in a way which reminds Buridan's one. Despars takes Ibn Ridwan's commentary on Galen's *Tegni* as his point of departure, and criticizes Ibn Ridwan's hierarchical classification of complexions by saying that (a) it is not possible to think about simple complexions, i.e., complexions based on a unique quality (cold, dry, wet, hot) – these complexions are in fact very transitory;[60] (b) it is not possible to define a general rule concerning the length of complexions, because not-inherent elements can always cause modifications to organisms;[61] (c) the hot and humid complexion

60 'Respondet Haly secundo *Tegni* commento illius *Canoni*. Decidente vero calida et sicca crasi dicens. Sequitur ergo ut sit brevioris vite natura quam alii homines ille cuius complexio est a principio ipso frigida et sicca. Deinde sequitur ipsum cuius complexio est frigida tantum. Deinde sequitur ipsum cuius complexio est sicca tantum. Deinde sequitur ipsum cuius complexio est frigida et humida. Deinde sequitur illud cuius complexio est calida et sicca. Postea sequitur eum cuius complexio est humida tantum. Deinde sequitur eum ille cuius complexio est equalis. Deinde sequitur ipsum cuius complexio est calida et humida. Et hoc Haly reliquit complexionem calidam tantum vel scriptor omisit quod locanda videtur post humidam tantum vel resecanda est a presenti materia cum aliis tribus simplicibus attento quod hic agitur de longitudine durationis secundum complexiones et quod complexiones simplices non sunt diu permansive saltem sub esse intenso immo rarissime reperiuntur … Dictum est autem in his libris questioni de crasibus impossibile esse permanere ad multum discrasiam aliquam unam, ipsa enim sibi acquirit ex necessitate aliam. Idcirco plurimis medicorum quattuor vise sunt esse sole discrasie composite. Et illud praesens capitulo primo doctrina huius. Iste tamen quattuor non diu permanent. Restricto igitur sermone ad complexiones compositas'. See Jacques Despars, *In Avicennae Canonem*, Lyon 1498.

61 'Supponitur primo quod in comparatione alterius ad altera in longevitate omnia sint paria propter complexionem. Nihil enim prohibet complexionem que de se longevior est fieri brevitatem ex parte climatis, aut opificii aut mali aspectus celi, sicut cholericus morans in India vel coquus aut faber factus minus durat phlegmatico fabro aut coquo morante in India. Secundo supponitur quod complexiones lapsae comparate ad invicem iure longevitate sint lapse equaliter a temperata. Aliter enim reputata brevior secundum speciem posset esse magis longeva ut phlegmatica parum lapsa est maioris durationis cholerica valde lapsa'. See Jacques Despars, *In Avicennae Canonem*, Lyon 1498.

does not occupy the first place in the hierarchy. Only the tempered complexion (i.e., the *complexio temperata ad iustitiam*) can be taken as a zero point, an ideal top of the range: it is the only possible rule to which the complexions concretely existing in the nature can be compared to be defined, at times, as more or less balanced and long lasting. Always having the tempered complexion in mind as the target of equilibrium (a target that, as in Buridan's case, cannot exist in nature), humoral complexions can be ordered according to their proximity to, or their distance from, heat and humidity, the two main vital qualities.[62]

4.2.1.3. Female Complexion and the Phases of the Moon

Buridan also treat the topic of humoral complexions in his commentary on *De secretis mulierum*, in a question on the connection between female menses and the moon's phases (q. 8). In this question, Buridan introduces humoral complexions in the section labelled 'de tempore fluxus menstruorum et modo'.[63] The four humoral complexions (*sanguinea*, *cholerica*, *melancolica*, and *flegmatica*) are connected to the four quarters of the moon because these quarters are respectively linked to the four couples of primary qualities: hot and humid, hot and dry, cold and dry, and cold and humid. On the basis of this premise, Buridan introduces four claims (*conclusiones*). The first claim is that sanguine complexion is connected to the first quarter of the moon because the sanguine humor increases in that moon phase.[64] According to the second claim, choleric complexion is connected to the second quarter of the moon. Buridan raises an objection at this point arguing that it can be said that there are no women with a choleric complexion because, as Avicenna states, even the hottest woman is colder than the coldest man. In reply to this objection Buridan argues there are two ways in which

62 'His premissis dico primo quod temperata complexio est longevior … Dico secundo quod sanguinea complexio est longevior post temperatam. Primo quia est vicinior temperate, cum temperata complexio secundum membra principalia declinet ad calidum et humidum ut premissum est. Secundo ipsa plus abundat in principiis vite calido scilicet humido … Dico tertio principaliter a quesitum rendendo quod complexio cholerica est longevior post sanguineam. Primo quia plus abundat in calore innato in quo vita consistit. Cuius rei signum est quod in ea pulsus et anhelitus sunt maiores et fortiores … Dico quartus quod complexio phlegmatica est longevior post cholericam. Primo quia plus accedit ad temperatam quam melancholica cum sibi communicet in humiditate … Dico quinto quod melancholica complexio est brevissime vite quia recedit a temperata in utraque contrarietate et minus habet de principiis vite et operationes restaurationis magis debiles'. See Jacques Despars, *In Avicennae Canonem*, Lyon 1498.

63 E, q. 8, 10.

64 'Tunc est prima conclusio quod mulieres complexionis sanguinee paciuntur fluxum in prima quarta lune'. See E, q. 8, 13.

a woman can be considered choleric: (1) compared to man ('in comparatione ad viros'), and (2) compared to other women ('in comparatione ad se ipsas'). In the first sense no woman is choleric, but in the second sense a woman can be choleric compared to other women.[65] According to the third claim melancholic complexion is connected to the third quarter of the moon. Against this claim, the following objection is raised: when dryness prevails, the menstrual fluid, being a humor, by nature something humid, cannot occur. Buridan replies that the third quarter of moon is not melancholic without qualification (*simpliciter*), but it is melancholic only in comparison to the other quarters (*in comparatione ad alias quartas*).[66] Finally Buridan's fourth claim is that the phlegmatic complexion is connected to the fourth quarter of the moon.[67] The four complexions and the moments of flux are then connected to the four seasons: women with sanguine complexion are more affected by *menstruum* in spring; choleric women in summer; melancholic women in autumn; and phlegmatic women in winter. In the majority of cases, Buridan concludes, menstrual flux occurs with new moon and in winter, the weather being colder and women mostly phlegmatic.[68]

---

65 'Secunda conclusio: quod mulieres colerice in secunda quarta lune paciuntur fluxum menstruorum. Probatur quia: talibus mulieribus menstruum maxime augetur in illo tempore; ergo tunc pacientur fluxum. Tenet consequencia ut prius. Antecedens patet, quia quilibet humor maxime augetur in tempore sibi consimili. Sed contra hoc arguitur: non est dare mulieres colerice complexionis; ergo nulle tales mulieres paciuntur fluxum in secunda quarta. Tenet consequencia. Antecedens patet, quia, ut dicit Avicenna, calidissima mulier est frigidior frigidissimo viro; et quia frigidissimus vir non est colerice complexionis, ut notum est, ergo multo minus calidissima mulier, que adhuc est isto viro frigidior. Dicendum quod aliquam mulierem esse colerice complexionis intelligitur dupliciter: uno modo in comparacione ad viros, alio modo in comparacione ad se ipsas. Primo modo nulla mulier est colerice complexionis, et hoc probat racio. Sed alique mulieres dicuntur magis calide aliis comparando ipsas ad invicem.' See E, q. 8, 15–16.

66 'Tercia conclusio: quod mulieres melancolice complexionis paciuntur menstruum in tercia quarta lune. Probatur: in tercia quarta maxime augetur humor in talibus mulieribus; igitur in illa quarta paciuntur. Tenet consequencia. Antecedens patet, quia dum luna habet influenciam frigidam et siccam, ergo tunc augmentat omnem humorem melancolicum. Sed contra hoc arguitur: in illo tempore mulieres non paciuntur menstruum quod est maxime siccum; sed hoc tempus tercie quarte ⟨est maxime siccum⟩; igitur etc. Maior patet, quia ex quo menstruum est humor, non augetur in tempore sicco, et per consequens non fluit de mulieribus in illo tempore. Minor patet, quia illud tempus est melancolicum, et per consequens siccum. Respondetur concedendo, si tempus simpliciter esset siccum; si autem secundum quid, non oportet. Modo sic est in proposito, quia tercia quarta lune non dicitur esse melancolica simpliciter, sed solum in comparacione ad alias quartas'. See E, q. 8, 17–18.

67 'Quarta conclusio: quod mulieres fleumatice complexionis paciuntur fluxum menstruorum in quarta quadra lune'. See E, q. 8, 19.

68 'Sed dubitatur in quo tempore anni mulieres magis paciuntur menstruum, et similiter in qua

Even if the commentary tradition on pseudo-Albertus' *De secretis mulierum* has not been properly studied until now, it seems likely that Buridan's account of the correspondence between the phases of the moon and menstrual flux is not isolated in this textual tradition. Buridan is commenting on the following, brief, passage of pseudo-Albertus' *De secretis mulierum*: 'Quibusdam vero mulieribus iste fluxus accidit in novilunio, quibusdam vero ante, quibusdam autem post, ita quod non eodem tempore omnes mulieres istum dolorem paciuntur'.[69] At least in one other known commentary on pseudo-Albertus' text we can find the very same classification with correspondences between the quarters of moon, humoral complexions, and menstrual flux. It is the so-called 'commentary B' partially presented and translated by Helen Rodnite Lemay:

> Each phase of the moon has four quarters, and women suffer their period in accordance with these phases. The first is when the new moon begins. This lasts about eight days and is characterized by blood because it is hot and humid and in this time women with a sanguine complexion suffer. The second is choleric, for it is hot and dry, and choleric women get their periods. The third quadrant is melancholic, that is cold and dry, and affects melancholic women, and the fourth is cold and wet, or phlegmatic, and touches these women. Despite this classification, almost all women frequently get their periods in the end of the month, for almost all have a cold, phlegmatic nature.[70]

---

quarta. Dicendum quod sanguinee magis paciuntur in vere, colerice in estate, melancolice in autompne, fleumatice in hyeme. Tamen ut in pluribus, ut dicitur secundo *De generacione animalium*, hoc accidit magis in defectu lune, scilicet circa novilunium, et in hyeme propter maiorem frigiditatem temporis, et eciam quia mulieres ut in pluribus sunt fleumatice'. See E, q. 8, 19.

69 See pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, in: *El* De secretis mulierum *atribuido a Alberto Magno*., cit., 236, ll. 37–40. The connection between female menstruation and moon's phases is already in Aristotle's *De generatione animalium*: 'Et propter hoc erit menstruum mulierum naturaliter in diminutione lunae maius, nam illi dies sunt frigidiores aliis diebus mensius propter diminutionem lunae et paucitatem caloris'. See Arist., *De gen. an.*, IV.2, 767a3–5 in Aristotle, *De generatione animalium (translatio vetus)* ed. A.M.I. Van Oppenraaij, in: *Aristotle*, De Animalibus, *Michael Scot's Arabic-Latin Translation, Part Three, Books XV–XIX: Generation of Animals*, Brill, Leiden 1992, 174. I was not able to find the exact reference in the *Problemata*, but the correspondence between moon's phases, female menses and humours could be present also in this tradition (?).

70 See pseudo-Albert the Great, *De secretis mulierum*, ed. by H.R. Lemay, in: *Women's secrets: a Translation of pseudo-Albertus Magnus'* De secretis mulierum *with commentaries*, cit., 71–72.

Nevertheless, Buridan's account is clearly more elaborated and richer than the one we find in the aforementioned 'commentary B'. Moreover, in contrast with 'commentary B', Buridan's text contains the same comparative and relational approach to the concept of 'complexion' we found in his commentaries on *De generatione et corruptione* and the *Parva naturalia*. In fact, the phrase '*in comparatione ad*' is often repeated as the key to solve the main objections raised against the theory he is exposing. Buridan answers the objection against the possibility for a woman to be choleric by distinguishing between two ways in which a woman can be considered choleric: compared to men and compared to other women. Moreover, in order to solve the objection according to which, when dryness prevails, the menstrual flux cannot occur, he underlines that the third quarter of the moon is not '*simpliciter*' melancholic but '*in comparatione ad alias quartas*'.

4.2.2. *Conclusions*

In this section we have examined how Buridan presents and employs the medical concept of 'complexion' in the framework of his natural philosophy.[71] The first case study, on the perfectly blended mixture, discussed by Buridan in his commentary on *De generatione et corruptione* (q. II.11), made it clear that Buridan bases his solution to the question on the medical concept of 'complexion' and on the medical distinction between *complexio temperata ad pondus* and *complexio temperata ad iustitiam*. Buridan argues that a perfectly tempered mixture is possible only if we consider it as *temperata ad iustitiam*, while he maintains the impossibility of a permanent state of temperance. In Buridan's commentary on *De generatione et corruptione*, a comparative and relational concept of 'complexion' emerges, the one typical of the medical tradition. This approach clearly appears in the other two case studies: the link between complexion

71 More elements on the topic of Buridan's use of the concept of 'complexion' will be available when Buridan's commentary on the *Physiognomia* will be edited. See *supra* 57. As reported by L. Thorndike, in his commentary on the *Physiognomia*, Buridan presents another important distinction between two types of complexion: *complexio a nativitate* and *complexio acquisita sive fluens*, i.e. between a complexion proper to the organism since its birth, and an acquired complexion. See Buridan's *Quaestiones de Physiognomia* as found in ms. Oxford, Bodleian Library, Canon. Misc. 422, f. 111rv (the 'A' version in B. Michael's classification, see B. Michael, op. cit., 785): 'Sciendum est etiam quod complexio est duplex, quia quedam est iudicialis que inest alicui a principio nativitatis. Alia est complexio acquisita sive fluens, que non inest a principio nativitatis sed acquisita per regimen contrarium illi complexioni'. The passage is quoted from L. Thorndike, '*De complexionibus*', *Isis* 49, 4 (1958), 398–408, esp. 398.

and life expectancy (q. 5 of the commentary on *De longitudine et brevitate vitae*) and the relation between female complexions and the moon's phases (q. 8 of the commentary on *De secretis mulierum*). In both cases, Buridan addresses the concept of 'complexion' as linked to the theory of the humors. In the first case, he deals with the issue of the length of life as connected to each of the four complexions, sanguine, choleric, phlegmatic, and melancholic. He concludes that it is impossible to determine with certainty which complexion is the best: in nature, we only have some *complexiones lapsae* (i.e., complexions that deviate from a hypothetical well-tempered complexion) that change according to various internal and external circumstances, and that are better or worse than the others independently from the humors composing them. In the second case, Buridan presents the connection between humors, complexions, women's menses, and moon phases. His comparative and relational approach to the concept of 'complexion', therefore, also comes to light in this discussion, where Buridan displays how characterizations of female 'physiology' in terms of humoral complexions must often be conceived as 'compared to' specific situations.

Buridan's use of the concept of 'complexion' to solve the question on tempered mixture, and his discussion of humoral complexions in q. 5 of the *De longitudine et brevitate vitae* and q. 8 of the *De secretis mulierum*, bear witness to his knowledge of medical theories. Our study makes it clear that Buridan had a grasp of medical doctrines, in particular, the medical comparative and relational concept of complexion, which was also shared by Buridan's contemporary medical texts of the Parisian *milieu*. Moreover, our discussion reveals Buridan's readiness of using medical authorities and doctrines in the framework of his natural philosophy.

4.3. Buridan and the Concept of 'Radical Moisture' (*humidum radicale*)

> Ed è da sapere che questo arco [di giù, come l'arco] di su sarebbe eguale, se la materia de la nostra seminale complessione non impedisse la regola de la umana natura. Ma però che l'umido radicale è meno e più, e di migliore qualitade [e men buona], e più ha durare [in uno] che in uno altro effetto – lo qual è subietto e nutrimento del calore, che è nostra vita –, avviene che l'arco de la vita d'un uomo è di minore e di maggiore tesa che quello de l'altro. E alcuna morte è violenta, o vero per accidentale infertade affrettata; ma solamente quella che naturale è chiamata dal vulgo, e che è, è quel termine del quale si dice per lo Salmista: 'Ponesti termine, lo quale passare non si può'. E però che

> lo maestro de la nostra vita Aristotile s'accorse di questo arco di che ora si dice, parve volere che la nostra vita non fosse altro che uno salire e uno scendere: però dice in quello dove tratta di Giovinezza e di Vecchiezza, che giovinezza non è altro se non accrescimento di quella.
>
> Dante Alighieri, *Convivio*, IV, XXIII, 7–8

This section analyzes Buridan's use of the concept of 'radical moisture', and related concepts, by studying a question in his commentary on Aristotle's *De morte et vita* titled *Utrum vita potest perpetuari in aliquo animali per sumptionem nutrimenti*.[72] This question offers me the occasion to spell out (1) some characteristic features of Buridan's view of natural philosophy in its relation to medicine; and (2) some considerations about the use of the concept of 'radical moisture' in fourteenth-century works on natural philosophy. From a more general point of view, my analysis of Buridan's text will contribute to the reconstruction of the still understudied history of the concept of 'radical moisture' (*humidum radicale*).

4.3.1. *The Concept of* 'humidum radicale'

The concept of 'humidum radicale', or 'radical moisture', found its origin in Greek Antiquity, was systematized by Medieval Arabic authors, and was widely spread and discussed in the Latin Middle Ages and in the Renaissance.[73] Although the importance

---

72 In my exposition, I am following the edition of Buridan's *Parva naturalia* prepared by Stanek. I will also pay some attention, when useful to my topic's purposes, to some differences between this manuscript version and the Lokert edition of Buridan's commentary on *De iuventute et senectute sive de morte et vita*. In the Lokert edition, the *quaestio* on *humidum radicale* is q. 6 on *De iuventute et senectute sive de morte et vita* titled *Utrum per consumptionem alimenti possit vita perpetuari in aliquo vivente*. See John Buridan, *Quaestiones in libros* Parva naturalia, Paris 1516 and 1518, ff. LVI^{va}–LVII^{va} (henceforth: QJSMV$_L$, q. 6). Some references to Buridan's use of the concept of radical moisture in his *Quaestiones de generatione et corruptione* will also be provided. See q. I.15 in John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros *De generatione et corruptione* Aristotelis, cit., 120–124.

73 See the recent entry for the *Encyclopedia of Renaissance Philosophy* by E. Moreau, 'Radical Moisture', in: M. Sgarbi (ed), *Encyclopedia of Renaissance Philosophy*, Springer, 2015, doi:10.1007/978-3-319-02848-4_403–1. In addition to the bibliography provided in the footnotes below in this introduction, see also the following titles: P.L. Reynolds, *Food and the Body: Some Peculiar Questions in High Medieval Theology*, Brill, Leiden 1999, esp. 105–119; D. Jacquart, 'La nourriture et le corps au Moyen Age', *Cahiers de Recherches Médiévales et Humanistes*, 13 (2006), 259–266; S. Marinozzi, 'Umido radicale ed invecchiamento nel primo Evo Moderno', *Medicina nei Secoli* 22, 1–3 (2010), 531–552; D. Schäfer, 'More than a Fading Flame. The Physiology of the Old Age between Speculative Analogy and Experimental

of the Ancient Greek and the pre-Avicennian Arabic background of this concept is clear,[74] the concept of 'radical moisture' owes its detailed formulation, and its fortune, to Avicenna's *Canon*. Broadly speaking, *humidum radicale* is a kind of moisture present in the body since conception that plays the role of fuel in all bodily processes in which the consumption of vital heat is involved. In Avicenna's account, *humidum radicale* is considered the fourth of the so-called 'secondary moistures', i.e., the *humiditates* that were added by Arabic authors to the four primary moistures (blood, phlegm, yellow bile, and black bile) to explain the process of digestion. Another type of moisture, namely the *humidum nutrimentale*, is conceived as an addition of humidity necessary to the vital operations: this moisture takes its origin only from nutriment, and is not a radical part belonging to the body since conception.[75] As this short introductory summary makes it clear, the concept of '*humidum radicale*' is very complex, often unclear, and it gives rise to many possible doubts and divergent interpretations. For example, its twofold origin is problematic: in fact, it is both spermatic and linked to the process of digestion. In addition, its relation with the *humidum nutrimentale* is highly ambiguous: are they two ontologically different substances or does the difference between them reside only in their respective functions? Moreover, an urgent question arises, namely whether radical moisture is restorable and, if so, whether the restoration is partial or complete.

Despite these problems, or even thanks to them, the concept of '*humidum radicale*' had a great fortune in the Latin Middle Ages and played an important role in the definition of the living (human) being from a medical, natural philosophical, theological, and alchemical point of view. Medicine is considered the main epistemological framework of its use and development: in this field, radical moisture had its '... first heuristic function ...', but, as Chiara Crisciani and Giovanna Ferrari argue, it is worthwhile to take into account the mutual influence between these fields of knowledge.[76] In the framework of medicine, the concept of 'radical moisture' mostly

---

Method' in: H.F.J. Horstmanshoff, H. King, and C. Zittel (eds), *Blood, Sweat and Tears: the Changing Concepts of Physiology from Antiquity into Early Modern Europe*, Brill, Leiden 2012, 241–266.

74 See S. Hall, 'Life, Death and the Radical Moisture', *Clio Medica*, 6 (1971), 3–23, esp. 5–9.

75 See S. Hall, 'Life, Death and the Radical Moisture', cit., esp. 4–5. See also M.R. McVaugh, 'The *Humidum Radicale* in Thirteenth-century Medicine', *Traditio*, 30 (1974), 259–283, esp. 265–268.

76 See C. Crisciani and G. Ferrari, 'Introduzione', in: M.R. McVaugh (ed), *Arnaldi de Villanova Opera Medica Omnia*, vol. 2, *Tractatus de humido radicali*, Universitat de Barcelona-Fundació Noguera, Barcelona 2010, 319–571, esp. 342 and 330–331. Crisciani and Ferrari's work constitutes the most detailed and extensive analysis of the concept of 'radical moisture' in the Middle Ages. Therefore, I have taken it as the main point of reference throughout this section. This text also outlines the use of the

appears in discussions concerning generation, nutrition, growth, aging, duration of life, fevers and diseases. Therefore, the concept of '*humidum radicale*' attracted philosophers' attention when commenting on Aristotelian natural philosophical works such as *De generatione et corruptione*, *De animalibus*, and *Parva naturalia*, works in which almost all the aforementioned themes were addressed.

As it often happens with many other concepts and doctrines in the history of medieval natural philosophy, Albert the Great played a crucial role in the reception and development of the concept of 'radical moisture' in the philosophical tradition of the Latin Middle Ages. In Albert's works, 'radical moisture' constitutes a key concept used to explain several phenomena pertaining to both human and animal spheres. Given the plurality of its fields of application, one of the main characteristics of Albert's use of this concept is the lack of systematization and clear definition.[77] This lack of systematization characterized all subsequent medieval natural philosophical reflections on the concept of '*humidum radicale*'. Moreover, as Crisciani and Ferrari rightly underline, it was not easy to coordinate Aristotle's natural philosophical reflections with the medical (mostly Avicennian) body of knowledge about human vital operations. Many commentators, especially before the fourteenth century, avoided to take into account concepts such as '*humidum radicale*' and '*humidum nutrimentale*', and favored Aristotelian views about the central role of vital heat and the ontological distinction between '*humidum aquosum*' and '*humidum pingue*'.[78] This

---

concept of *humidum radicale* in theological and alchemical contexts, see C. Crisciani and G. Ferrari, 'Introduzione', cit., 345–366 and 545–570. These reflections were introduced by C. Crisciani in a previous contribution: C. Crisciani, 'Aspetti del dibattito sull'umido radicale nella cultura del tardo medioevo (secoli XIII–XV)', in: J. Perarnau (ed), *Actes de la II Trobada Internacional d'Estudis sobre Arnau de Vilanova*, Institut d' Estudis Catalans, Barcelona 2005, 333–380, esp. 336–345 and 370–377.

77 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 385–391. On Albertus' view of radical moisture, see also M. de Asúa, 'War and Peace. Medicine and Natural Philosophy in Albert the Great', cit., esp. 283–285; S. Perfetti, 'La rigenerazione degli animali. Alberto Magno tra *Parva naturalia* e *De animalibus*', in: C. Crisciani, L. Repici and P. Rossi (eds), *Vita longa. Vecchiaia e durata della vita nella tradizione medica e aristotelica antica e medievale. Atti del Convegno internazionale, Torino, 13–14 giugno 2008*, SISMEL Edizioni del Galluzzo, Firenze 2009, 149–168, and J. Cadden, *The Medieval Philosophy and Biology of Growth: Albertus Magnus, Thomas Aquinas, Albert of Saxony and Marsilius of Inghen on Book I, Chapter V of Aristotle's* De generatione et corruptione, *with Translated Texts of Albertus and Thomas Aquinas*, Indiana University, unpublished Ph.D. thesis, 1971, esp. 135–142.

78 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 370. See also M.W. Dunne, ' "The Causes of the Length and Brevity of Life Call for Investigation": Aristotle's *De longitudine et brevitate vitae* in the 13th and 14th Century Commentaries', in: C. Crisciani, L. Repici and P.B. Rossi (eds), *Vita longa. Vecchiaia e durata della vita nella tradizione medica e aristotelica antica e medievale. Atti del Convegno internazionale, Torino, 13–14 giugno 2008*, SISMEL Edizioni del Galluzzo, Firenze 2009, 121–147, esp. 132–135. For the

situation slightly changed in the beginning of the fourteenth century, when it became more common to include medicine in the *corpus* of Aristotelian natural philosophy. Nevertheless, it seems that, also in this period, natural philosophers did not take so much advantage of medical texts and debates on *humidum radicale*.[79] However, as Crisciani and Ferrari admit, the use of the medical concept of '*humidum radicale*' in late medieval natural philosophy requires further study. In fact, we still have insufficient knowledge of medieval commentaries on the Aristotelian *Libri naturales*, especially on the *Parva naturalia*.[80] Moreover, among the commentaries on the *Parva naturalia* that have received scholarly attention, the discussions about *humidum radicale* have been largely neglected. Given the importance of Buridan as late-medieval philosopher, a study of his use of the concept of 'radical moisture' is necessary to enrich our knowledge of this topic.

Concerning the concept of 'radical moisture' in the Middle Ages, it is important to remember that there are two main medical authors who contributed to its definition and to the interpretation of the problems related to it: Arnaldus of Villanova[81] and Peter of Abano.[82] Despite the fact that their accounts are different in many respects,[83] they both agree on the following main points:

1) The *humidum radicale* is restorable. This is the case because of the following two suppositions:
   a) There is no ontological identity between *humidum radicale* and *humidum spermaticum*. This means that sperm is not the unique source of radical moisture: it can also be formed through the process of nourishment. This clearly comes

---

origin of this distinction in the Aristotelian tradition, especially as far as the *De longitudine et brevitate vitae* is concerned, see Arist., *De long. et brev. vitae*, 5, 466a17–467a5.

79 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 370–371.

80 On these commentaries see *supra*, 18.

81 On Arnaldus of Villanova, see Arnaldus of Villanova, *Tractatus de humido radicali*, ed. M.R. McVaugh, Universitat de Barcelona-Fundació Noguera, Barcelona 2010. On Arnaldus' view of *humidum radicale*, see C. Crisciani and G. Ferrari, 'Introduzione', cit., 397–434; G. Ferrari, 'Il Trattato *De humido radicali* di Arnaldo de Villanova', in: J. Perarnau (ed), *Actes de la II Trobada Internacional d'Estudis sobre Arnau de Vilanova*, Institut d'Estudis Catalans, Barcelona 2005, 281–331; and L. Cova, 'Il *Tractatus de humido radicali* di Arnaldo da Villanova: l'umido radicale nei dibattiti medievali', *Quaestio* 11, 1 (2012), 469–474.

82 See the *differentiae* 111, 112 and 113 of Peter of Abano's *Conciliator*. On Peter of Abano's view of *humidum radicale*, see C. Crisciani and G. Ferrari, 'Introduzione', cit., 440–464; G. Ferrari, 'La durata della vita: *humidum radicale*, medicina e astrologia nel *Conciliator* di Pietro d'Abano', in: J.-P. Boudet, F. Collard and N. Weill-Parot (eds), *Médecine, astrologie et magie entre Moyen Âge et Renaissance: autour de Pietro d'Abano*, SISMEL Edizioni del Galluzzo Firenze 2013, 107–130.

83 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 458.

to light from the fact that the radical moisture given to the embryo at the moment of conception is insufficient to accomplish vital operations.

b) There is no ontological difference between *humidum radicale* and *humidum nutrimentale*: in other words, generation, nutrition, and digestion are strictly connected to each other.

2) Given the previous point, the *humidum radicale* is restorable by means of the *humidum nutrimentale*.
3) However, this restoration has its limits: it cannot continue forever. At a certain point, in fact, the body is so corrupted that the restoration does not work anymore and the radical moisture is fatally deteriorated.[84]

After this general framework had been developed and was commonly shared and accepted, physicians became more interested in determining the causes of the deterioration and the ways to prolong life, more specifically the ways in which the physician could intervene to postpone death. In general, it seems that, after Arnaldus and Peter's theoretical achievements, the topic of the length of life and its prolongation became much more central than the issue of the different types of *humidum*, the relation between the various moistures, and the possibility of the restoration of radical moisture.[85]

4.3.2. *Buridan on* humidum radicale *and Related Concepts*

In q. 5 of his commentary on Aristotle's *De morte et vita* Buridan asks whether life can be perpetuated through the consumption of food. His answer to this question is distinctly negative: life cannot last forever (*in infinitum*). He first presents some arguments in favor of the position he is *not* going to support. For example, he says that given that heat in an organism can exceed the humidity, and thus consume it, we could think of a medium state, (*medio modo*), in which the heat cannot consume the humidity and vice versa: in this case, life would never come to an end.[86] Two

84 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 506.

85 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 510–511.

86 'Item: calidum potest excedere humidum, et sic consumere, et econtra humidum potest excedere calidum, et sic exstinguere. Propter quod Aristoteles ponit duas mortes, unam per humidi consumptionem, quae vocatur marcor, aliam per calidi exstinctionem, quae vocatur exstinctio. Sed sicut calidum et humidum possunt excedere unum alterum, ita possunt se medio modo habere, et tunc nec calidum consumeret humidum, nec humidum exstingueret calidum. Et sic nunquam sequeretur aliqua mors. Igitur perpetuaretur vita'. See PN*ms*, *De morte et vita*, q. 5, ll. 11–18, 274. In the Lokert

additional arguments specify how we should intend the 'permanence' or 'perpetuity' of an organism. The permanence of the organism must not be conceived in its entirety (*totaliter*) but just taking into account the continuous succession of bodily parts (*per successionem partis ad partem continue*); this is the sense in which it can be actually said that an organism perpetuates itself: new parts substitute old parts.[87] Just as for air, whose parts are continuously corrupted while new parts are generated, some parts of the living being can evaporate because of the heat, while other parts can be generated again through nutriments: in this way, an animal can exist perpetually.[88] – Arguments like these, Buridan argues, quickly lose their sense in the face of experience: old age is unavoidable and, at the end, death arrives. In fact, as Aristotle teaches, everything material is corruptible, and everything corruptible necessarily passes away.[89]

In his answer, as in the case of complexion,[90] Buridan admits that the question about the possibility of the perpetuation of life through the consumption of food is complicated.[91] Before formulating his view, Buridan presents the views of some (anonymous) authors, who explain why life cannot last forever through the consumption of food. These authors analyze the problem by making a distinction between two kinds of *humidum*: the *humidum radicale* and the *humidum cibale sive nutrimen-*

---

edition, Buridan defines that medium state as '*proportio aequalitatis*': 'Item calidum in vivente potest excedere humidum et ita consumere ipsum; ergo posset dari medium, scilicet proportio equalitatis. Ubi enim est dare maius et minus, ibi potest dari medium. Hac autem proportione equalitatis data, nec calidum poterit consumere humidum, quia non superdominabitur, nec humidum poterit extinguere calidum, quia etiam non dominabitur. Ergo semper durabunt et non deficiet vita'. See QLSMV$_L$, q. 6, f. LVI^{va}. For more considerations on this point, see *infra*, 176.

87 'Item: nullo toto tempore ignis candelae vel corpus equi vel capri manet totaliter idem, sed manet idem per successionem partis ad partem continue. Et tali modo potest etiam planta continuari, quia si corrumpitur unus ramus, generatur alius, et si corrumpitur una radix, generatur alia, si non deficiat nutrimentum. Ergo videtur, quod similiter hoc est possibile in animali'. See PN*ms*, *De morte et vita*, q. 5, ll. 27–32, 275.

88 'Item: sicut partes aeris alicubi corrumpuntur et aliae alibi generantur, et sic propter durat aer, et sic videtur possibile, pari ratione in vivente, scilicet quod si aliqua pars vel aliquae partes deficiunt per exhalationem vel evaporationem, et aliae adveniunt per nutrimenti sumptionem, videtur, quod semper sic poterit animal durare'. See PN*ms*, *De morte et vita*, q. 5, ll. 33–37, 275.

89 'Oppositum arguitur per Aristotelem, primo *Caeli* dicentem quod 'omne corruptibile de necessitate corrumpitur'; sed omne animal est corruptibile; ideo nullum animal potest perpetuari. Item: in omnibus videmus per experientiam naturaliter evenire senectutem, quam etiam naturaliter sequitur mors; ideo naturaliter necesse est omne animal mori et nullum animal perpetueri. Et communiter dicunt homines: 'nihil est certius morte, licet nihil est incertius hora mortis' '. See PN*ms*, *De morte et vita*, q. 5, ll. 39–45, 275.

90 See *supra*, 147.

91 'Ista quaestio est satis difficilis'. See PN*ms*, *De morte et vita*, q. 5, l. 46, 275.

tale. According to this view, the two kinds of *humidum* differ from each other with respect to their origin: the *humidum radicale* is inherited from the parents (*contrahitur a parentibus*) whereas the *humidum nutrimentale* is acquired through nutriment (*ex cibo acquiritur*). According to this view, the natural and vital heat is preserved only in the radical moisture. Therefore, when the radical moisture is entirely consumed, the natural heat expires even if a significant quantity of nutrimental moisture is still present in the corporeal members. This consequence being too extreme, the supporters of this opinion admit that, to a certain extent, the natural heat can also act on the nutrimental moisture so that the radical moisture can be preserved. Nevertheless, the natural heat still acts on the radical moisture that progressively expires and then completely wears out. So, death occurs because the body, at the end, lacks radical moisture.[92] Buridan specifies that there is another explanation, very close to the previous one, according to which death occurs because the radical moisture becomes more and more impure due to the fact that it is mixed with the nutrimental moisture; and because of this increasing impurity, it is no longer able to preserve natural heat.[93]

According to Buridan, both these opinions are inconsistent. They mainly go wrong in considering the radical moisture to be a substance entirely and exclusively derived from the parents. In fact, this purely parental origin would make the moisture too little (in quantity) to preserve all the natural heat present in the body.[94] Moreover,

92 'Quidam distinguunt inter humidum radicale et humidum cibale sive nutrimentale. Et dicunt humidum radicale esse illud quod contrahitur a parentibus vel generantibus in ipsius animalis generatione. Et dicunt humidum cibale quod ex cibo animalis acquiritur. Dicunt ergo quod calidum naturale et vitale non salvatur nisi in humido radicali. Ideo quando illud totum est consumptum, vel quasi totum, sequitur exspiratio caloris naturalis et mors, quamvis in membris remaneat multum humidum cibale. Deinde dicunt quod calidum continue agit in humidum consumendo ipsum, et ideo cito esset consumptum humidum radicale nisi adveniret humidum cibale, in quo et per quod occupatur actio calidi naturalis. Sed tamen illud humidum nutrimentale non sic occupat calidum naturale, quando ipsum calidum, cum evaporatione vel exhalatione humidi nutrimentalis, exhalet vel evaporaret, vel consumat aliquid de humido radicali, et tandem sequitur mors'. See PN*ms*, *De morte et vita*, q. 5, ll. 46–61, 275–276.

93 'Et alii dicunt satis proprinque praedictis, scilicet quod humidum cibale commiscet se humido radicali, cum quaelibet pars nutrimenti nutriatur, et reddit humidum radicale impurum, sicut si aqua commiscetur vino (I prefer the reading as in mss. SVW, instead of the 'immo' in the edition CB) et tandem reddit ipsum ita impurum, quod non potest in eo salvari calidum naturale et sequitur mors'. See PN*ms*, *De morte et vita*, q. 5, ll. 62–66, 276.

94 'Tamen haec opinio non bene videtur esse rationabilis, quia humidum radicale, secundum illos, est illud solum quod contractum est a nativitate, et illud vel esset illud solum quod est in prima formatione embrionis, vel esset illud quod esset in exitu ventris, scilicet in partu. Si primo modo constat, quod illud est valde paucum ad salvandum magnum animal, ut magnum hominem, vel ad

Buridan explains, the embryo is formed in the mother's uterus from female blood. This blood constitutes also the fetus' nourishment; and this blood is not purer than the one that nourishes the mother. Hence, it seems absurd to claim that life is preserved only through the moisture the embryo gets from generation, because the nutrimental moisture is equally pure and vital as the one received in generation. The radical moisture is in fact derived from the mother's blood.[95]

Given the inaccuracy of this opinion, in both its varieties, Buridan presents another position that seems much more plausible to him and which he eventually supports. The question about the possibility of the perpetuation of life through the consumption of food should be analyzed by means of a different distinction between two kinds of moisture: the *humidum fluens* and the *humidum consolidatum*. Buridan first provides the following brief introduction about these two kinds of moisture: the *humidum fluens* is the same as blood and the various bodily humours; the *humidum consolidatum* is the one forming bodily members, flesh, bones, and nerves. Soul and life reside in the *humidum consolidatum* as in a subject (*subiective*), but the *humidum fluens* is necessary for the preservation of life.[96] Therefore, natural heat continuously acts upon both kinds of moisture.[97]

---

salvandum tantum calorem naturalem quantum requiritur in magno corpore hominis. Si dicatur secundo modo, adhuc illud est paucum. Nec est bene dictum quod debeat dici humidum radicale contra humidum nutrimentale, quia illud animal iam longo tempore nutritum fuit in utero matris'. See PN*ms*, *De morte et vita*, q. 5, ll. *67–76*, *276*.

95 'Item: ex sanguine matris puer formatur et nutritur, ideo iste non est primalior (I prefer the reading as in mss. SVW; the edition has instead 'pueris melior' CB) nec vitalior quam sanguis ex quo mater nutritur. Et ita videtur absurdum quod vita tua salvaretur solum per humidum et in humido quod habuisti (habetisti *ed.*) a generatione, immo potest salvari in humido quod nunc habes, cuius maior pars est acquisita ex nutrimento, sicut in humido quod habuisti (habetisti *ed.*) a generatione. Tamen dictum fuit quod hoc non sit impurius vel peius'. See PN*ms*, *De morte et vita*, q. 5, ll. *77–82*, *276–277*. Note that Buridan here is not presenting the same elaborated theory on the female contribution to generation he instead presents in the commentary on the *De secretis mulierum*. In the framework of q. 5 on the *De morte et vita*, and for the purposes of the aforementioned proof, he is just reporting the Aristotelian common idea that the female *menstruum* provides both the matter and the nutriment to the fetus. See *supra* 113–120.

96 'Ideo alii ponunt viam nobiliorem, prout mihi videtur, distinguentes dicitur humidum, scilicet humidum fluens et consolidatum. Humidum fluens est sanguis et humores, qui nondum conversi sunt in membra. Humidum consolidatum est ex quo membra solida constituta sunt, ut cor et caput, et etiam caro et ossa, et nervi, et huiusmodi. In humido autem consolidato est anima subiective et non in humido fluente, quamvis ad salutem vitae requiratur humidum fluens, ut dicetur'. See PN*ms*, *De morte et vita*, q. 5, ll. *83–89*, *277*.

97 'Dicitur ergo quod calor naturalis agit continue in utrumque humidum'. See PN*ms*, *De morte et vita*, q. 5, l. *90*, *277*.

On the basis of this premise, Buridan addresses the topic of the perpetuation of life by distinguishing between two explanations of the causes of death: on the one hand, an explanation looking at the phenomenon of natural death from the point of view of the action of the *humidum consolidatum* (*ex parte humidi consolidati*) and, on the other, an explanation looking at the same phenomenon from the point of view of the action of the *humidum fluens* (*ex parte humidi fluentis*).

The first explanation (*mors ex parte humidi consolidati*) works as follows: the *humidum consolidatum* continuously loses some parts, and diminishes; therefore we need the *humidum fluens* (i.e., blood) to restore it. This *humidum fluens* is used to constitute the bodily members and progressively solidifies. The arrival of death is then explained as follows: in the process of the deterioration of the *humidum consolidatum*, the subtle components of the bodily members evaporate while the terrestrial and thick parts remain; therefore the members of the body solidify and, by becoming drier and drier, are less apt for saving the natural heat. At the end of this process, death necessarily occurs, and this is the reason why life cannot be perpetuated.[98]

The second explanation (*mors ex parte humidi fluentis*) works as follows: the *humidum consolidatum* is not sufficient to save the heat necessary to vital operations. Therefore a very subtle moisture, similar to fire, is required. This subtle moisture, the *humidum fluens*, is continuously converted into bodily spirits. Just as the heat of a candle vanishes when the flame burns out, so all the natural heat coming from both the *humidum consolidatum* and the *humidum fluens* vanishes once the spirits are extinct. Nevertheless, this process is not immediate: in fact, just as happens to the flame of a candle, spirits are continuously produced from the blood. Therefore, Buridan explains, the *humidum fluens* has a double role: to restore the *humidum consolidatum* and to produce spirits. How, then, does death *ex parte humidi fluentis* occur? Because of the hardening of the corporeal members, the *humidum fluens* cannot be sufficiently digested. As a result, it becomes raw and watery. In this way, it is no longer apt to generate spirits. Therefore, the body progressively loses its spirits, heat and life, and ultimately dies.[99]

---

98 'Et primo videndum est de humido consolidato, et dicitur quod continue aliquid de eo resolvitur et inde ad eius restaurationem indigemus humido fluente, scilicet sanguine vel proportionali, qui in membra convertitur et consolidatur. Modo oportet imaginari quod in resolutione illius humidi consolidati evaporatur subtilius et remanet terrestrius. Ideo continue membra durescunt et fiunt magis terrestra et sicca, et non ita bene possunt illa salvare calorem naturalem. Ideo tandem sequitur mors'. See PN*ms*, *De morte et vita*, q. 5, ll. *91–97*, *277*.

99 'Sciendum est ergo de humido fluente, quod humidum consolidatum non sufficit ad salvandum calorem tantum quantum requiritur ad vitam et operationes vitales animalium, sed requiritur humidum subtile, quod sit natum igniri, id est converti in spiritus, qui se habent in animali sicut

Death *ex humidi consolidati* and *ex humidi fluentis* are just two perspectives to describe the same phenomenon: the necessity of natural death. The corporeal members progressively solidify because their subtle parts evaporate while the terrestrial parts remain. The solidification of the corporeal members prevents the formation of vital spirits and heat. In other words, the *humidum consolidatum* cannot be restored by the *humidum fluens* anymore because, due to the progressive hardness of the corporeal members, the *humidum fluens* becomes more and more watery and indigested, not able to produce spirits anymore.

This double-faced description clearly comes to light from the example of the heart Buridan provides at this point of the text. How does death occur *ex parte cordis*? According to Buridan, the heart becomes more and more terrestrial and cannot move anymore, neither is it able to produce spirits and to send them to the stomach and the liver in the quantity required to perform the process of digestion. Therefore, food is less digested and, as a consequence, it is not possible to derive from it the quantity of heat required for the vital operations of the heart. It is an inescapable double chain: the less heat is present in the heart, the less digestion works in the other organs. The less digestion works, the less heat is available for the heart.[100]

---

flamma in candela. Sicut enim exstincta flamma exspirat totus calor in candela, sic exstinctis seu exhalatis spiritibus exspirat totus calor naturalis et ab humido fluente, et ab humido consolidato. Spiritus autem, quamvis exhalant, tamen continue generant sibi alios ex sanguine, per quos vita exercetur, sicut flamma candelae, licet continue ascendat exhalando. Tamen etiam continue ante eius recessum generat sibi ex candela flammam sequentem. Manifestum est ergo quod humidum fluens ad duo deservit (defluit *ed.*), scilicet ad restaurationem humidi consolidati in membris, cuius tamen aliquid consumitur et exhalat, et deservit etiam ad generationem spirituum ex eo. Oportet ergo considerare, quod ille sanguis propter ineptitudinem et duritiem membrorum praedictam non potest bene perfecte digeri (dirigi *ed.*). Ideo remanens crudum et aquaticum non possunt ex eo bene calidi spiritus generari. Et sic tandem oportet deficere spiritus et calorem, et vitam. Et ita haec est causa necessitatis mortis ex parte humidi fluentis'. See PN*ms*, *De morte et vita*, q. 5, ll. 103–121, 277–278. Note: I read here 'digested' as 'refined'. Due to the hardening of the corporeal members, the blood remains watery and cannot be processed to be converted in spirits.

100 'Et Aristoteles, sicut tetigi (tetigit *ed.*) prius, dicit postquam deveniat ex parte pulmonis, sed etiam ex parte cordis. Cor factum durum et terrestre non potest sic moveri, nec tot spiritus generare, nec illos ad stomachum et ad hepar mittere spiritus sufficientes ad digerendum cibum. Ideo remanet cibus minus digestus. Ideo non potest ex eo fieri sufficiens calor in corde, et quanto minor calor fit in corde, tanto minoratur digestio et econverso quanto minoratur digestio, tanto minoratur calor in corde. Et ita tandem oportet totum deficere et animal mori'. See PN*ms*, *De morte et vita*, q. 5, ll. 121–129, 278. In the Lokert edition, the example of the heart is slightly different. It involves and develops two points of view on the basis of which it is possible to describe natural death: *ex parte pulmonis* and *ex parte cordis*. Buridan, in fact, provides two examples aimed at showing how the natural and necessary death follows from the malfunctioning of old organs. The phenomenon of

In a few lines, Buridan offers a negative answer to the question of the possibility of a perpetual life obtained through nutriment: natural death necessarily occurs. Nevertheless, the phenomenon of natural death cannot be explained by postulating a *humidum radicale* (having a completely generative origin) that is just partially restored by a *humidum nutrimentale* (having instead a completely different origin, namely from food). The radical moisture cannot originate only *a parentibus* because, otherwise, it would be of an incredibly small amount, and hence it would be immediately consumed. At the same time, the two moistures cannot be conceived as completely separated substances having a completely different origin, generative and nutrimental. The blood that constitutes the embryo, in fact, is the same as the one feeding the baby in the womb, and it is actually the same blood constituting and nourishing the mother. Therefore, natural death (and the impossibility of a perpetual life) must be explained otherwise. Natural death must be conceived as a phenomenon in which two kinds of moistures are involved (namely the *humidum consolidatum* and the *humidum fluens*), very strictly connected to each other and not ontologically differentiated. The natural heat, in fact, acts upon both the *humidum consolidatum* and the *humidum fluens*. More precisely: the body is constituted by thick

natural death is described here *ex parte pulmonis* and *ex parte cordis*. If we look at the phenomenon of the natural death as *marcedo* from the perspective of the lungs, we will have what follows: the lungs start becoming more and more terrestrial and hard because subtle parts are progressively removed from them and only the terrestrial parts remain; at this point, they are not able to refresh the heart's heat anymore. Therefore, the heat quickly consumes the humidity around the heart, which is supposed to be converted in spirits. As a result, death occurs. If we look at the phenomenon of natural death as *marcedo* from the perspective of the heart, we will have the following parallel scenario: in the old age, the heart becomes harder and, consequently, unable to send spirits to the other organs. Therefore, the spirits that remain around the heart rapidly consume the small amount of humidity that exists there and that is apt to be converted into spirits. As a result, all the humidity exhales and death occurs: 'Item specialiter ex parte pulmonis ostendit hic Aristoteles necessitatem mortis, quia pulmo per certum tempus efficitur nimis terrestris et durus eo quod continue subtilius ab ipsis membris resolvitur et terrestrius remanet, sicut dictum fuit. Ideo ille pulmo non bene et prompte movetur ad refrigerandum calorem cordis, et sic ille calor non refrigeratus consumit cito in senectute illud paucum humidum quod circa cor erat innatum converti in spiritus. Et tunc sequitur mors quod vocatur marcedo. Similiter posset ostendi specialiter ex parte cordis, quia cor ex senectute factum dicitur terrestre et durum et per consequens ineptum ad prompte moveri non potest (the text does not seem to work here CB) exsufflare spiritus generatos ad membra exteriora. Ideo illi remanentes circa cor consumunt cito illam paucam humiditatem que ibi existens est innata converti in spiritus et ita totum exhalat et sequitur marcedo. Et non credatis propter predicta, scilicet propter predictum defectum refrigerationis vel exsufflationis, quod in corde calor sit fortior in senectute quam in iuventute, sed est forte respectu pauci humidi tunc ibi existentis ita quod potest ipsum cito consumere'. See QJSMV$_L$, q. 6, f.LVII^{rb}.

parts that progressively solidify because the heat constantly dries the humidity inside the body; blood, bringing a subtle humidity and generating spirits, is able to continuously restore the humidity lost by the parts. But, at a certain point, the corporeal members are solidified and dried to such a degree that the subtle moisture becomes too watery and unsuited to provide humidity and to generate spirits. This double and intrinsically unified phenomenon of a drying body, on the one hand, and bloody-humoral moisture getting ineffective, on the other, finally leads to death.

This brief overview of Buridan's question on the perpetuity of life, from his commentary on D*e morte et vita*, is now followed by a section aimed at presenting, more explicitly, what Buridan's text tells us about (a) the role of medicine in Buridan's work of natural philosophy, and (b) the concept of 'radical moisture' in the fourteenth century.

4.3.3. *Conclusions*

4.3.3.1. Humidum radicale: *Buridan and Medicine*

With respect to Buridan's attitude vis-à-vis medicine and his use of medicine in his theory of the perpetuity of life, the first point to notice is that Buridan seems to have been acquainted with Peter of Abano and Arnaldus of Villanova's views on *humidum radicale* and *humidum nutrimentale*.

First, Buridan clearly argues against a generative origin, *tout court*, of radical moisture: as claimed by Peter and Arnaldus, the ontological identity between radical and spermatic moisture cannot be accepted. This comes to light when a simple consideration is introduced: if radical moisture only had a generative origin, its quantity would be clearly insufficient to accomplish all vital operations and to preserve all the vital heat present in the body. The same observation is also made by Buridan in his commentary on D*e generatione et corruptione*. In this text, Buridan discusses the question *Utrum augmentatio fiat secundum partes formales et non secundum partes materiales*.[101] He reports different ways in which the philosophical tradition interpreted Aristotle's distinction between formal and material parts in the body. One of these interpretations is ascribed to Alexander of Aphrodisias. According to Buridan, Alexander associated the formal parts of the body with the *humidum radicale*

101 John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros D*e generatione et corruptione* Aristotelis, cit., 120.

and the material parts with the *humidum cibale*.[102] Buridan criticizes this view. One of his arguments against Alexander runs as follows: it is absurd to think that a human being grows uniquely on the basis of the humidity that comes from the parents' generative seed; this humidity is in fact of an insufficient quantity, and the human being cannot grow entirely thanks to this small amount of spermatic moisture.[103]

Second, Buridan is convinced that there is no ontological difference between *humidum radicale* and *humidum nutrimentale*. He underlines this point by explaining that the nutrimental moisture is as pure and vital as the one received in generation. In fact, there is an ontological continuity between the blood constituting the fetus and the blood nourishing the mother. This idea of an ontological continuity between moistures clearly comes to light in the second part of the *quaestio*, where Buridan offers an explanation of natural death in terms of *humidum consolidatum* and *humidum fluens*. These are not two ontologically different substances. On the contrary, Buridan uses them as two sides of the same coin to explain one and the same phenomenon, natural death, seen either as occurring because of the consolidation of the corporeal members (*mors ex parte humidi consolidati*) or as occurring because of the weakening of corporeal blood and humours (*mors ex parte humidi fluentis*). First, the natural heat acts upon both the moistures as they share the same biological origin and nature;

---

102 'Alexander imaginabatur alium modum, vidilicet quod in corpore vivente aliud est humidum radicale, quod est illud quod contractum est ex seminibus parentum, aliud est cibale, et est quod a cibo acquisitum est. Tunc dicit quod humidum radicale manet usque ad mortem et quod si esset consumptum, sequeretur mors, quia calor vitalis in humido radicali conservatur. Sed humidum cibale fluit et defluit; ideo non manet idem. Et quia secundum illud quod manet animal augetur, et non augetur secundum illud quod manet, ideo conclusit quod animal augeretur secundum partes humidi radicalis et non secundum partes humidi cibalis. Et sic partes humidi radicalis vocabat Aristoteles 'partes secundum formam', quia in eis forma et vita radicantur, et partes humidi cibalis vocavit 'partes materiales'. Aliter dixit sermonem Aristotelis nullum esse'. See *ibidem*, 121–122, ll. 16–5.

103 'Sed illa opinio videtur mihi deficere … Secundo. Absurdum esset dicere quod homo vel equus augetur solum secundum illud humidum quod est ex semine parentum, quia illud esset valde paucum et forte de quantitate unius digiti; et homo augetur valde secundum plurem quantitatem quam secundum quantitatem unius digiti'. See *ibidem*, 122, ll. 5–14. Besides the commentaries on the *Parva naturalia*, the commentaries on *De generatione et corruptione* constitute another important place to study philosophers' uses of the conceptual cluster pertaining to radical moisture in natural philosophical works (See C. Crisciani and G. Ferrari, 'Introduzione', cit., 395). This cluster appears also in Oresme's commentary (see q. I, 15 in Nicole Oresme, *Quaestiones super* De generatione et corruptione, ed. S. Caroti, cit., 127–134) and, more extensively, in Marsilius of Inghen's *Quaestiones* (see q. I.13 in Marsilius of Inghen, *Quaestiones in libros* De generatione et corruptione, Venezia 1505, repr. Frankfurt am Main 1970, ff. 79^{rb}–80va, but also the *quaestio* on the tempered *mixtum*, namely q. II.15, ff. 119^{vb}–123^{rb}. See *supra*, 139–145).

second, the process of coming-to-death must not be presented in terms of two different interactive substances playing different roles, but rather in terms of a unique biological explanation in which the hardening of corporeal parts, the scarcity of heat, and the impossibility of producing vital spirits bring human beings to their death.

In addition to Buridan's apparent acquaintance with Peter of Abano and Arnaldus of Villanova's teachings on *humidum radicale*, it is possible to single out some more elements of Buridan's relation to medicine in the context of his discussion on the causes of death.

The most important remark in this respect is that Buridan bases his analysis on the conceptual pair *humidum consolidatum/humidum fluens*. At least from one text of the late fourteenth century we know that this was the conceptual pair used by the 'medici moderni' – i.e., physicians not entirely following Avicenna and Averroes but presenting modern ways in medical discussions – when dealing with issues concerning the duration of life. The relevant text is a *quaestio* by Simone da Castello. In this *quaestio*, the Italian master recalls the doctrine about vital humidity sustained by the *medici moderni*. According to their doctrine, Simone claims, the *humidum* in the body is twofold: *fluens* and *consolidatum*. The *humidum fluens* is a subtle substance apt to be inflamed and to be converted into spirits. It is associated with blood and humours. The *humidum consolidatum*, by contrast, is the constituent of solid corporeal members such as flesh, bones, and nerves. According to these modern physicians, life consists of heat and *humidum consolidatum* that is preserved by the *humidum fluens*, and natural heat acts upon both kinds of moisture.[104]

Let us read Simone da Catello's text:

> Pro responsione istarum rationum notandum est primo una distinctio medicorum modernorum, scilicet quod humidum in proposito est duplex: scilicet fluens et consolidatum. Fluens humidum est corpus subtile aptum inflammari et converti in spiritus (species *ed.*) et ex quo finaliter generantur spiritus (species *ed.*) naturales, vitales et animales qui (que *ed.*) sunt in corpore animalis sicut flamma in igne carbonis; cuiusmodi sunt sanguis et humores qui

104 See G. Federici Vescovini, 'Simone di Castello, maestro delle Arti a Bologna nella seconda metà del secolo XIV e la medicina dei 'moderni'', *Rivista di filosofia neoscolastica*, 70 (1978) 227–238. A subsequent version with some bibliographical updates and corrections is Ead., 'Simone di Castello e la medicina dei 'moderni'', in: G. Federici Vescovini (ed), *'Arti' e filosofia nel secolo XIV. Studi sulla tradizione aristotelica e i 'moderni'*, Vallecchi, Firenze 1983, 213–229.

> nondum sunt quasi in membris (membrum *ed.*). ⟨Humidum⟩ consolidatum, autem ⟨est corpus⟩ ex quo membra solida iam constructa sunt in caro, ossa, nervi et huiusmodi.[105]

We can plausibly infer that Buridan, in his commentary on D*e morte et vita*, knew and used a common (or widespread) contemporary medical terminology and doctrine related to the issue of the aging process and the duration of life. It also clearly appears that Buridan is not merely *reporting* this medical doctrine: he is also *supporting* it. He considers this doctrine appropriate to address the topic of natural death and to answer the question of the duration of life. In fact, Buridan refers to this doctrine with the wording '… alii [i.e., the supporters of this position] ponunt viam nobiliorem …' and develops this position in all possible details to solve the initial question. After having described this doctrine, he turns to the final part of the *quaestio* answering the initial arguments put forward in favor of the perpetuity of life. With the physicians of his time (and with the *medici antiqui*) Buridan also shares the conclusion that natural death cannot be avoided and that life must come to an end. Nevertheless, not being a physician himself, Buridan leaves aside questions about the possibility of delaying death and about how to obtain the prolongation of life, which occupied an important place in medical treatises.[106]

Throughout the text, there are other clues providing evidence of Buridan's acquaintance with contemporary medical discussions on *humidum radicale* and the prolongation of life. There are some common elements in these discussions: a notable attention paid to the role of heat (an Aristotelian element actually shared among physicians, on the one hand, and philosophers at the faculty of Arts, on the other[107]), reflections about the relationship between bodily moistures and spirits,[108] and the use of concepts of 'proportion' and 'complexion'.[109]

In Buridan's text, we find these elements in the following way.

---

105 This is a trascription by Federici Vescovini. See G. Federici Vescovini, 'Simone di Castello e la medicina dei 'moderni'', in: G. Federici Vescovini (ed), *'Arti' e filosofia nel secolo* XIV. *Studi sulla tradizione aristotelica e i 'moderni'*, Vallecchi, Firenze 1983, 213–229, esp. 228–229, footnote 40. I have corrected the text and the punctuation when necessary. On Simone da Castello on this point, see also C. Crisciani and G. Ferrari, 'Introduzione', cit., 496–498.

106 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 509–510.

107 See C. Crisciani and G. Ferrari, 'Introduzione', 504.

108 See C. Crisciani and G. Ferrari, 'Introduzione', 511.

109 See C. Crisciani and G. Ferrari, 'Introduzione', 504.

First, the importance of the notion of 'vital heat' in Buridan's explanation of human life clearly comes to light. Apart from a mere count of the number of occurrences (the word 'calidum' appears 16 times and the word 'calor' 17 times in the text), the importance Buridan ascribes to heat in answering the question about the duration of life is evident from a theoretical point of view. Life is preserved when heat is preserved. Therefore, the *humidum fluens* helps the *humidum consolidatum* in preserving the body's vital heat. In other words, the corporeal parts, to be maintained, need the help of the sanguineous substance, which provides spirits and heat. When the corporeal parts become too terrestrial, the moisture can no longer produce spirits and, therefore, heat is no longer available for the body. The lack of heat leads to the malfunctioning of vital operations. This point clearly comes to light from the example of the heart: without heat in the heart, digestion in the stomach and in the liver is not possible. Moreover, without good performances of the stomach and the liver, the heat needed by the heart is not produced. The importance of heat in the solution of the question about the duration of life is also evident from the statement that heat acts upon *both* the *humidum consolidatum* and the *humidum fluens*. This point is important because it contradicts the idea of an ontological difference between the two moistures: the idea that heat acts upon both moistures, in fact, constitutes a shared aspect between Buridan and the physicians of his time.[110]

Second, Buridan underlines the relationship between *humiditates* and *spiritus*: he clearly connects the *humidum fluens* to the production of spirits, and describes life as a continuous generation of spirits from moisture. This generation comes to an end when corporeal members become too dense and thick, and corporeal humidity (mostly blood and humours) becomes unable to produce spirits.

Third, Buridan makes use of the concept of 'proportion' in his criticism of the possibility of a perpetual life. An argument at the beginning of his *quaestio* supported the idea of a 'middle way' (*medius modus*) between heat and humidity that would guarantee the maintenance of both of them without any mutual extinction. Buridan criticizes this argument. Even if heat and humidity were in the best possible proportion (*optime proportionata*), the heat, at the end, would consume the humidity. The nutriment, in fact, has the power to restore it, but not forever (*perpetue*). The introduction of the concept of 'proportion' is much more evident in the Lokert edition. In this edition, we also find the medical concept of 'complexion' Buridan discussed elsewhere in his commentaries on Aristotle.[111] First, Buridan speaks about natural

110 See again Simone da Castello's references to the *medici moderni*. See *supra*, footnote 105.

111 See the previous section of this thesis.

death in terms of the one that would occur *in homine perfecte complexionato* in order to understand whether also in the best thinkable – and maybe not even possible – conditions it is impossible to search for a perpetuity of life; the answer, of course, is that the perpetuity of life is impossible also in those conditions.[112] Second, Buridan criticizes the argument according to which the perpetuity of life would be possible conceiving a *proportio aequalitatis* between heat and humidity.[113] Buridan explains that this argument goes wrong because a perfect proportion is not compatible with life: there must be a higher quantity of heat able to digest the *humidum* and to convert the humidum into spirits.[114] As in the case of Buridan's reflections on complexion presented in other parts of the present thesis, we can acknowledge here the approach to the concept of 'complexion' Buridan shared with physicians: perfect complexions and

112 In the Lokert edition, before introducing the solution of the question of perpetuity of life based on the concepts of *humidum radicale* and *humidum nutrimentale*, Buridan presents some reflections. He starts by going back to the initial arguments. Some people (*aliqui*) state, Buridan explains, that life can perpetuate through food if this food is the most appropriate one and if that food is eaten in the right proportion required for the body; nevertheless, since these conditions cannot be realized (in fact, ages and food vary), a deterioration of the organism always happens, and in the end death arrives: 'Aliqui propter rationes tactas dixerunt quod animal posset perpetuari per nutrimentum si semper haberet nutrimentum convenientissimum et de illo nutrimento nunquam acciperet plus vel minus opportuno et quod etiam semper esset in illo loco temperatissimo et in nullo opere excederet opportuno vel deficeret ab opportuno. Tamen quia hoc non est possibile propter varietatem temporum et ciborum, ideo propter excessus et defectus in quantitate vel qualitate nutrimenti vel aliorum concurrentium cum vita necesse est tandem corpora animalium pati et deteriorari et sic tandem sequi mortem'. See QJSMV$_L$, q. 6, ff. LVI^{va}. Buridan's following statement is then clear-cut: 'I think that this opinion is not true. On the contrary, even if all the aforementioned conditions occurred at the same time, still old age and death would necessarily happen' ('Credo tamen quod hec opinio non sit vera. Immo si omnia predicta concurrerent, tamen adhuc de necessitate sequeretur senectus et mors …'; see QJSMV$_L$, q. 6, ff. LVI^{va}). On the basis of this, Buridan states that the question of origin of the necessity of death should be analyzed: '… ideo videndum est unde proveniat necessitas mortis'. See QJSMV$_L$, q. 6, ff. LVI^{va}. For the expression 'in homine perfecte complexionato', see *infra* footnote 116.

113 For this argument, see *supra* footnote 86.

114 The relevant passage runs as follows: 'Ad aliam dicendum est quod si calor obtineat super humidum ut possit ipsum digerere et sibi convertere, tunc manifestum est quod consumeret ipsum totum nisi restauraretur nutrimento. Et quamvis restauraretur, tamen fit durificatio predictorum membrorum ad quam tandem est necesse sequi mortem. Si autem calidum non sic obtineat quod possit humidum sibi convertere, tunc ille non est sufficiens ad vitam. Et ideo non valebat illud argumentum de proportione equalitatis quam ad vitam exigitur calor potens digerere humidum et convertere in spiritus et cetera'. See QJSMV$_L$, q. 6, f. LVII^{rb}. This was also a theoretical and practical point held by physicians: a perfect proportion implies immobility, and immobility is contrary to life (See C. Crisciani and G. Ferrari, 'Introduzione', cit., 497–498).

perfect proportions are not apt to explain biological phenomena.[115] The Lokert edition offers another interesting example of Buridan's acquaintance with medical literature. There, in fact, Buridan seems to have interiorized the distinction between accidental and necessary death used in medical literature to deal with the problem of restorability of the radical moisture, the process of aging, and the question on perpetuity of human life.[116] More in general, comparing the manuscript version and the Lokert edition on the question on perpetuity of life, it can be stated that: a) the two versions are very close to each other, with no conceptual incongruity. Nevertheless, the question in the Lokert edition is longer and presents a more elaborate structure, in which the concepts of '*humidum radicale*' and '*humidum nutrimentale*' are not inserted immediately after the initial arguments but only after having introduced the important difference between accidental and necessary death; (b) the use of the distinction between accidental/necessary death, and the (broader) use of the concepts of 'proportion' and 'complexion' Buridan makes in the Lokert edition, suggest that the early modern printed version of the question on the perpetuity of life is more pervaded with medical elements than the manuscript version.

In conclusion, Buridan's question on the duration of life, from his commentary on Aristotle's *De morte et vita*, provides extremely interesting information about Buridan's relation to medicine. First, Buridan bases his reflections about the length of life, the process of aging, and the causes of death on a cluster of concepts related to radical moisture. This is striking because, as already underlined, it seems that natural philosophers – even in the fourteenth century – did not usually take so much advantage of medical texts and debates on *humidum radicale*.[117] More importantly, Buridan does not merely insert *en passant* the concepts of 'radical moisture' and 'nutrimental moisture' in his commentary. On the contrary, he first presents and rejects a position in which radical and nutrimental moisture are involved to explain natural death and then provides his own explanation of natural death according to the standard medical categories of his time: *humidum consolidatum* and *humidum fluens*.

115 See *supra* 126–159.

116 'Est igitur notandum quod alique sunt mortes violentae ut si homo gladio vel aliter interficiatur vel si per nimium et ineptum vel cibum vel potum calor naturalis extinguatur et iste mortes sunt accidentales, non ex necessitate nature. Ideo de illis non est nunc loquendum, sed de morte que contingeret in homine optime complexionato et optimi regiminis prout esset naturaliter possibile'. See QJSMV$_L$, q. 6, ff. LVI^{va}. On this distinction in the medical literature, See C. Crisciani and G. Ferrari, 'Introduzione', cit., 497.

117 See *supra*, footnote 78.

Moreover, Buridan seems to be well acquainted with the medical achievements of Peter of Abano and Arnaldus of Villanova on this topic. In addition, Buridan mentions several points typical of the medical accounts of radical moisture of his time. On the basis of these considerations, the case of *humidum radicale* (and related concepts) turns out to be a good example showing Buridan's willingness to integrate medical teachings into the framework of his natural philosophy, and bears witness to his conception of medicine as a discipline that helps natural philosophy by providing doctrines and epistemological tools useful for a more precise understanding of living (human) beings.

4.3.3.2. *Some Remarks on the* humidum radicale *in the Fourteenth Century*

Through the previous analysis, we also collected some important information about how Buridan's *quaestio* contributes to our understanding of the history of the concept of 'radical moisture' in the fourteenth century.

First, Buridan's text confirms that Peter of Abano and Arnaldus of Villanova's teachings on radical moisture had a long lasting influence on late medieval reflections about longevity, aging, and the causes of death. Buridan's text, in particular, shows that in the fourteenth-century, three main and mutually connected ideas about radical moisture were absorbed: radical moisture does not necessarily have a completely spermatic origin; radical moisture and nutrimental moisture are not two completely different substances and radical moisture is restorable and can be restored through the action of the nutrimental moisture.[118]

Second, Buridan's text is an example of the general fact (claimed by Crisciani and Ferrari) that, in the fourteenth century, after Peter of Abano and Arnaldus of Villanova's systematizations of the issue of the restorability of radical moisture, the topic of the restorability was overtaken by reflections on the longevity and prolongation of life. The point was no longer to establish whether the radical moisture is restorable or not, neither to fix the differences and the relationship between different kinds of moistures. The new interest mainly focused on the limits of life and on the possibility of prolonging it. The shared view in the medical texts was the following: life is not perpetual, because of the progressive deterioration of the *humidum* in the body; nevertheless, it is possible to intervene somehow in order to prolong life.[119] In Buridan we find a reflection on the possibility of prolonging life *ad infinitum*, a reflection in which Buridan inscribes his treatment of the topic of natural

118 See *supra*, 163–164.

119 See *supra*, 164.

death. Nevertheless, we do not find any reflections on *how* to prolong life. In other words, Buridan deals with the theoretical issue of the possibility of prolongation of life, but he does not face the problem of the practical interventions that can be made in order to delay death. This is probably what distinguishes Buridan's discussion of the length of life, aging, and death from the ones provided by physicians. And, as Crisciani and Ferrari argue, this is probably the attitude differentiating medical and philosophical reflections on *humidum radicale* at that time.[120]

Third, as already underlined, Buridan directly enters the discussion on the *humidum radicale*: he refuses certain positions and clearly supports the one describing natural death in terms of an interaction between *humidum consolidatum* and *humidum fluens*. This proves that the debates around the cluster of concepts pertaining to radical moisture were still animated in the fourteenth century, and that the authors writing about it (in this case a philosopher) did not want to present just some overviews of positions but also entered the discussions with personal considerations. As Crisciani and Ferrari argue, it seems that this trend started changing in the late fourteenth century, when authors seem more inclined to give expositions of *pro* and *contra* arguments on different issues related to *humidum radicale* without expressing their own support to any of them.[121]

In conclusion, the case of Buridan's view of radical moisture, which has not been addressed by scholarship before, represents a strong confirmation of what Crisciani and Ferrari describe as the panorama of the use of the concept of radical moisture in the first half of the fourteenth century: the absorption of Peter and Arnaldus' teachings, the predominance of the discussions on longevity and the prolongation of life, the liveliness that still characterized the discussions on the radical moisture. At the same time, my analysis suggests that future studies on fourteenth-century commentaries on the *Parva naturalia* could show us that fourteenth-century natural philosophical authors were much more involved in debates on radical moisture than Crisciani and Ferrari supposed.

Both cases of Buridan's use of and approach to the concepts of 'complexion' and 'radical moisture' in his commentaries on natural philosophical works have functioned as examples of Buridan's willingness and ability of using medicine and medical debates in order to provide his own descriptions of living organisms and biological operations.

120 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 513.

121 See C. Crisciani and G. Ferrari, 'Introduzione', cit., 499. Crisciani and Ferrari give the example of Jacopo da Forlì.

Considering these last two cases together with the previous analysis of Buridan's approach to controversial topics such as the hegemonic organ and the male and female roles in reproduction (posed at the core of the so-called 'controversy between philosophers and physicians'), the following final section shall draw the conclusive reflections of this study.

CHAPTER 5

Conclusions: Buridan, Natural Philosophy, and Medicine. A New Perspective on Buridan's Thought

The previous chapters analyzed a set of natural philosophical texts of John Buridan in order to focus on his description of the living organism from the point of view of its strictly biological characteristics and functions. These texts have been examined from the perspective of the use of medical knowledge Buridan made in his natural philosophy. My aim was to outline the most striking features of the relationship between natural philosophy and medicine in Buridan's thought. In this section, I shall present the general conclusions of my work and underline to what extent and how the present study has improved our knowledge of Buridan's thought. More particularly, the first part of these conclusions presents the outcomes of my research with respect to the most specific topic of this thesis, i. e., the relationship between natural philosophy and medicine in Buridan's works on natural philosophy. The second part shows, more generally, the contribution of this thesis to the scholarship on Buridan. In this part I shall present some final considerations on Buridan's thought and on the possible ways of interpreting it. For the sake of clarity, I have divided these conclusions into brief points. Nevertheless, the reflections contained in each of them are closely related with one another, so that they must be read has a unified whole. For this same reason, some overlap or repetition are to be expected.

5.1. Buridan, Natural Philosophy, and Medicine

5.1.1. *The Features of Buridan's use of Medicine in his Natural Philosophy*

5.1.1.1. *Medical Sources and Doctrines in Buridan's Natural philosophical Works*

The goal of this thesis was not to make a complete reconstruction of Buridan's medical sources and his use of medical doctrines. My focus has been on a few (carefully selected) case studies aimed at providing detailed information about specific examples of Buridan's relation to medicine. From these case studies, more general conclusions about Buridan's approach to natural philosophy (in particular, to the biology of the

organism) stem. A more comprehensive work on Buridan's medical sources and use of medical doctrines will be only possible when all Buridan's natural philosophical texts (in particular his commentary on the *Physiognomia*) will be edited and when our understanding of the interplay between medicine and natural philosophy in the Parisian fourteenth-century *milieu* will have improved. Likewise, Buridan's use of medical sources and doctrines will be clearer when it will be compared in detail with the use of medicine that other Parisian philosophers of Buridan's time made in their works on natural philosophy.

Given my limited goal, this thesis has provided some important elements that shed new light on Buridan's medical sources and his use of medical doctrines.

It has become clear that Buridan was acquainted with traditional and authoritative medical sources (the Hippocratic-Galenic tradition and Avicenna, above all, but also Isaac Israeli in the framework of the topic of generation). Through these sources, he was familiar with some crucial medical ideas and doctrines that originated in the ancient medical tradition, as the case studies of the problem of the hegemonic organ, of the theory on generation, and of the use of the concept of 'complexion' testify. At the same time, it has come to light that Buridan also had at least some knowledge of medical authors of his own times and their doctrines. This is testified especially by his reflections on the length of life: Buridan seems to be acquainted with Peter of Abano and Arnaldo of Villanova's views of radical moisture, views that were used by Buridan as a starting point to develop a further theory about bodily moistures. He seems to share this theory (based on the concepts of '*humidum fluens*' and '*humidum consolidatum*') with some 'modern' physicians. Another sign of Buridan's acquaintance with contemporary medical doctrines can be derived from the fact that he seems to share some ideas on complexion with Parisian physicians of his time (Pierre de Saint-Fleur, Jacques Despars).

It is not easy, given our present state of knowledge, to determine how exactly Buridan got acquainted with those doctrines, whether his medical sources where second-hand or first-hand, and precisely to what extent he knew theoretical medicine.

Concerning traditional medical theories and sources, we have no elements to exclude completely that Buridan knew some of them through a direct reading of the standard Latin translations of Greek or Arabic medical texts. However, the general impression is that Buridan knew them mostly through a reading of previous natural philosophical texts that mentioned these theories. Buridan, in fact, does not refer to precise passages of medical texts and, in most cases, he reports very general summaries of what the traditional medical theories said on a certain topic.

As already pointed out, Buridan seems to be acquainted also with medical discussions of his own times, especially about complexion and bodily moistures. In both cases, Buridan does not explicitly refer to authors or works. Hence it is not possible to precisely determine how he came into contact with those discussions, i.e., whether or not he read contemporaries medical texts, or whether he personally knew some theoretical physicians teaching at the Faculty of Medicine, or whether he learnt about contemporary medical trends through some other philosophers' works, or because those medical doctrines simply acquired enough fame to become part of the common and shared knowledge at the university in the fourteenth century.

What can be stated with certainty is that Buridan made use of traditional medical sources, doctrines, and ideas when dealing with natural philosophical issues, that he was acquainted with at least some of the medical debates of his times, and that he took advantage as much as possible of medical theories to describe the living organism. The main features of Buridan's use of medical sources and theories shall be retraced in the next points.

5.1.1.2. *Beyond the* conciliatio*: the Integration of Medicine in Natural Philosophy*

On several topics, the 'Aristotelian' natural philosophical tradition and the 'Galenic' medical tradition held different views. What do the issues involved in the so-called 'controversy between philosophers and physicians' tell us about Buridan's use of and relation to medicine?

Controversies on the hegemonic organ and on the roles of male and female in reproduction show how Buridan is not simply engaged in a mere reconciliation between the two traditions. He does indeed establish a *dialogue* between the two traditions in terms of harmonization of the diverging authorities (a common attitude of both philosophers and physicians of his times), however, he does not restrict himself to a simple *reconciliation* between the authoritative doctrines. The case of the localization of the common sense is the clearest example of Buridan's attitude towards the controversial topics and towards the medical tradition in particular. He does not just briefly repeat a traditional way of solving the controversy. On the contrary, he develops a rich and detailed description of the process of internal sensation, by taking advantage of the traditional medical theories and ideas on the functioning of the brain. In his commentary on Aristotle's *De anima*, Buridan shows how the interaction between the natural philosophical bedrocks and the medical doctrines can be used to develop a comprehensive description of sensation, dreams, and memory. Neither does Buridan limit himself at simply repeating without a personal contribution

the traditional solution of the problem of the origin of veins and blood. What makes the medical opinion compatible with the natural philosophical one is its own and intrinsic *rationality*. In the case of the topic of generation, Buridan does not deal with the controversial questions of the male and female contributions to reproduction by merely harmonizing the Aristotelian and the Galenic viewpoints. On the contrary, he comments on some pseudo-Albertinian questions on 'women's secrets' taking the occasion of providing an insightful account of generation in which the Galenic and medical doctrines are actively deployed to search for an explanation of how the reproduction process works and how males and females contribute to it.

Therefore, Buridan is certainly inspired by the general aim of harmonizing the authorities but, at the same time, he takes the chance of *going beyond* a mere attempt of reconciliation in order to develop an extensive, personal, and sophisticated analysis of some biological processes regarding the functioning of living organism. In Buridan's analysis of biological phenomena, the medical tradition is systematically used as a crucial source of information about how organisms function. Thus, the natural philosophical and the medical traditions are deployed as two vital domains of knowledge whose interaction is able to offer a more adequate, and hence more satisfying, description of the living organism.

5.1.1.3. Integration of Medical Theories in Natural philosophical Texts

Buridan borrows medical ideas and doctrines also outside the typical controversial topics belonging to the debate between philosophers and physicians. He introduces medical theories when dealing with the topics of the possibility of the perfectly tempered mixture, of the best conditions for the duration of lifetime, of the occurrence of menstrual flow in females, and of the bodily moistures and causes of death in living organisms. All these cases show, in different ways, how Buridan both grasps traditional and contemporary medical theories and applies them as systematically as possible in a natural philosophical context.

The medical ideas on complexion are used to explain how the balance of a mixture works and how we can explain the normal and pathological constitution of the organism, as well as the different durations of organisms' life. Buridan does not just integrate the medical concept of 'complexion' in his texts but also proves to grasp its meaning as it was normally used in the medical tradition, i.e., as a relational and comparative concept. The medical cluster concept of 'radical moisture' is used by Buridan to describe both the bodily functioning of an organism and its dysfunctional status leading to death. More accurately, Buridan shows his acquaintance with Peter

of Abano and Arnaldus of Villanova's teachings on radical and nutrimental moistures. Taking their views as a starting point, develops a more advanced explanatory model of bodily moistures and the causes of death. Buridan's more advanced model can be linked to contemporary medical debates about similar topics.

Therefore, in the framework of natural philosophical topics, and in order to explain certain biological problems or phenomena, Buridan makes maximal use of medical ideas seen as indispensable instruments to adequately describe the functioning of living organisms.

5.1.1.4. On and Off the Aristotelian Path: Buridan's Attitude towards the 'Galenic Tradition' and its Relationship with the Aristotelian Framework

The 'Galen' available to Latin medieval authors (both natural philosophers and physicians) was not exactly the 'Galen' that modern editions and studies brought us to know. Galenic theories that circulated in the Middle Ages had gone through many stages of reception, translation, and interpretation. This makes preferable to use the term 'Galenism' or, even better, the 'Galenic tradition', instead of 'Galen'. Most of times, in medieval writings, this 'Galenic tradition' overlapped with an even more general 'medical tradition' of which Galen was seen as the most prominent representative. This premise given, from the case studies carried out in this thesis, we have observed that Buridan very seriously takes into account some Galenic bedrocks, especially when using the concept of 'complexion' and when embracing a certain version of Galen's two-seeds-theory in generation. To some extent and in some cases, as the one just mentioned, Buridan turns out to be more 'Galenic' than some medical doctors. This state of fact invites us to question how and to what extent this endorsement of medical ('Galenic') theories affects Buridan's relationship with the Aristotelian authority.

As all cases taken into account in this thesis have shown, Buridan's most basic framework for the description of the living organism is indeed Aristotelian. Buridan was a master teaching at the Faculty of Arts in Paris. In that capacity, his professional task was to comment on Aristotelian philosophy. He was not engaged in the Faculty of Medicine and he was not supposed to be an expert of theoretical medicine. These premises posed, and after our analysis of some of Buridan's natural philosophical texts, we can state that Buridan, when describing the living organism from the perspective of its strictly biological functions, was an Aristotelian who, at the same time, cleared a great space to medical ideas and doctrines taken both from the medical tradition and from some contemporary medical debates. The point, then, when addressing the topic of Buridan's treatment of the living organism, is not to remark

that Buridan was Aristotelian, or even '*very* Aristotelian'. This is in fact undeniable and, above all, unsurprising. This is what we expect from Buridan's treatment of the biological processes pertaining to the living beings. We expect him to show how the Aristotelian tradition had dealt with the topic of the biological functioning of the body. On the contrary, our attention should be pointed to another aspect, which has been the main focus of this thesis. Within an inevitable Aristotelian framework, Buridan was willing to introduce knowledge coming from another tradition and another institutional framework: that of medicine. When the most relevant problems concerning the biological characteristics of living beings were concerned, Buridan was not satisfied with what the Aristotelian tradition had to tell. When describing processes of sensation, nutrition, generation, the duration of life, and the causes of death, Buridan always turned to medicine.

While this is of course something a medieval author could have been inspired to do by Albert the Great's model of syncretism, this was plainly not what Buridan was supposed to do. As it has been stated, to include medicine in the discussion of natural philosophical issues was not an easy task. Buridan seems to engage himself with this operation of including medicine within an Aristotelian framework with a certain ease and mastery. The case of the hegemonic organ (both in the aspect of the localization of sensation and of the origin of veins and blood) and the case of generation have proved how Buridan was not just presenting medical theories for a traditional need of comparing them with the Aristotelian ones, pointing out the differences and trying to reconcile them. His way of harmonizing the *opiniones* shows a lively intellectual engagement aimed at borrowing from the medical tradition all elements useful to contribute to the knowledge of the biology of organisms. His theory of internal sensation, for example, is built thanks to an understanding of the possibilities the medical tradition offered to involve the brain in the explanation of sensitive cognitive phenomena. Similarly, his theory of generation takes advantage of the 'Galenic' point of view and is shaped on the basis of an interaction between medical and Aristotelian ideas. The cases of complexion and radical moisture show that Buridan integrates with consistency medical ideas and medical debates within his Aristotelian-natural philosophical framework to discuss the topics of the normal and pathological constitution of the body and of the causes of life and death.

Hence, the important point is not that Buridan followed the path of Aristotelian natural philosophy to describe the biological functions of the living organisms. We should not have expected anything different. What our attention should be directed to is how Buridan engaged with medicine in order to enrich and improve that description.

From this viewpoint, it also becomes clearer how and to what extent Buridan's use of medicine affects his relation to Aristotle.

On the one hand, the texts analyzed in this thesis have shown that Buridan's overall framework remains Aristotelian. This applies, first of all, to *doctrines*. For examples, Buridan endorses a clear cardiocentric position about the localization of the common sense, he remains faithful to a hylomorphic consideration of the roles of male and female in reproduction, and he frames the discussion of complexion in a context in which the Aristotelian description of the roles of the qualities of the elements in the mixture plays a prominent role. Second, but not secondarily, this applies to the *theoretical framework* he is working in. Buridan's main theoretical pattern is the Aristotelian natural philosophy, conceived as a reflection on the living being based primarily on a logical, ontological and metaphysical ground (which is not 'science' as we can consider it in contemporary terms). We have seen, for example, in the case of Buridan's treatment of the problems related to the roles of male and female in reproduction, how his comprehension of certain facts of generation passes primarily through the instruments and distinctions provided by logic, ultimately based on an ontological understanding of reality.

On the other hand, Buridan's basic Aristotelian framework is 'contaminated' by his use of medical ideas and doctrines. In some respects, particularly the ones pertaining to the biological description of the organism, the Aristotelian thought is seen as insufficient to grasp the functioning of living bodies. For that reason it had to be supplemented by an external field of knowledge: medicine. From Buridan's texts it emerges, then, that natural philosophy, especially inasmuch as biology is concerned, is not seen as a self-contained science closed within the Aristotelian system to which it belongs, but as a science that requires the contribution of other fields of knowledge, external to the Aristotelian framework. Buridan's systematic use of medicine eventually scales down a monodic dependence on the Aristotelian authority itself.

5.1.2. *The Epistemological Relationship between Natural Philosophy and Medicine*

From Buridan's texts, it appears that Avicenna's thought played a crucial role in Buridan's relationship to medicine. Avicenna is often mentioned as an authority, and his medical doctrines, together with his concern for reconciliation of the Aristotelian and Galenic points of view, shaped Buridan's way of dealing with medicine in his natural philosophy. In this respect, Buridan in a certain way follows the example of Albert the Great (and many of his followers). Nothing unexpected here: Avicenna's

reading of the Aristotelian and Galenic positions inspired the efforts of medieval philosophers and physicians to harmonize the opposite opinions found in Aristotelian and Galenic writings. However, contrary to what Albert the Great most often does, Buridan does not follow Avicenna's standard procedure of solving controversial topics. In none of the case studies examined in this thesis Buridan uses as a solution of the controversy between philosophers and physicians the distinction between 'philosophical knowledge', based on ultimate principles, and 'medical expertise', based on sense observations of particular situations. In other words, Buridan does not follow the Avicennian path of harmonizing the diverging *opiniones* by arguing that, whatever the controversial case is, the different views of philosophers and physicians are based on their different ways of dealing with the reality of a living organism: a way led by rational reasoning, which goes beyond sensation and grasps the first causes of the phenomena, and a way guided by sense experience sticking at the phenomena.

As it is confirmed by a passage of the question on the origin of veins and blood in which Buridan summarizes Avicenna's solution to the controversy in a few lines, Buridan was well aware of this Avicennian path. However, he seems not to follow this line of reconciliation. He thinks that the medical view of the problem of the origin of veins and blood is *rationalis* and *probabilis*, just as the philosophical position. Buridan is not drawing a theoretical distinction between the philosophers grasping what is true and rational and the physicians catching only the non-conceptualized phenomena of nature. The medical position has the same *rationality* as the philosophical one. Neither does Buridan use the Avicennian standard procedure in dealing with the topic of the localization of the common sense. Here, Buridan does not present the philosophical and the medical opinions at two different levels of rationality, but integrates in a general natural philosophical framework the medical view of the role of the brain to provide his own description of the phenomena related to internal sensation. The same applies also to the controversial topic of the roles of male and female in reproduction: here the Galenic theory of generation is inserted in the framework of Aristotelian hylomorfism without being placed at a different level of rationality. Ultimately, in Buridan's texts, medicine is used to enhance natural philosophy so as to provide a more precise and adequate view of living organisms as they seem to work in nature. Therefore, a convincing, true and *rational* way to describe the biological aspects of living organisms eventually requires, in Buridan's eyes, the contributions of *both* natural philosophy *and* medicine.

In the framework of a general '*riassetto delle discipline*' ('reorganization of disciplines'), as Chiara Crisciani uses to call the transformation occurring in the relation-

ship between disciplines during the late Middle Ages and the early modern period, Buridan's way of including medicine in the framework of natural philosophy in order to develop his own more accurate descriptions of living organisms eventually led him to put natural philosophy and medicine on a same epistemological level. At least as far as the 'sciences of life' are concerned, medicine, in Buridan's eyes, is a field of knowledge that can reach true and rational conclusions necessary to accomplish the task of accurately describing biological processes in nature. The study conducted in the present thesis thus confirms Jole Agrimi's conclusions. It provides additional evidence to her conclusions, by showing how Buridan fits in that fourteenth-century trend of revision of hierarchies between philosophy and the so-called 'special sciences', a revision that narrows the epistemological gap between natural philosophy and medicine.

5.2. A New Perspective on Buridan's Thought

5.2.1. *Additional Features of Buridan's Natural Philosophy: the Description of the Living Organism and the Interplay between Natural Philosophy and Medicine*

Natural philosophy currently is the liveliest field of the scholarship on Buridan. Hopefully, this thesis has provided new insights by studying some almost unexplored aspects of Buridan's natural philosophy. My study especially focused on Buridan's description of the living organism from a strictly biological viewpoint. It paid attention to Buridan's anatomo-physiological description of the mechanisms of sensation (related to the problem of the localization of the common sense); his analysis of the process of digestion (linked to the issue of the origin of veins and blood); his account of the functioning of human generation (especially the roles of male and female in reproduction); his reflections on the body's temperament and health, and on duration of life (linked to the concept of 'complexion'); and his theory on corporeal moistures and causes of death. The major issues concerning the functioning of the organism as treated by Buridan have thus been collected, described in detail, and interpreted. These topics have been disposed and analyzed from the perspective of the influence of medicine in Buridan's natural philosophy. For the first time, Buridan's natural philosophy, deeply rooted in the Aristotelian tradition, has been extensively examined from this perspective. Eventually, it turned out that Buridan's description of the living organism and his accounts of the aforementioned topics are consistently characterized by the interplay with medicine. Buridan systematically

uses ideas borrowed from the medical tradition and the medical debates of his time to build his theory of the living organism.

These new insights in Buridan's natural philosophy have been made possible through the reading of some unexplored and/or unedited works of Buridan. First, my study provides an additional interpretation of some crucial aspects of Buridan's theory of sense perception as it is found in his commentary on the *De anima*. In particular, Buridan's theory of the localization of the common sense has been thoroughly analyzed and interpreted against the background of the relationship between natural philosophy and medicine. Moreover, Buridan's anatomo-physiological description of 'ways' connecting the heart to the brain, used to explain the localization of internal sensation, has been placed in its proper doctrinal and historical context, which was lacking in the existing secondary literature. Second, this thesis has examined several questions from Buridan's *Parva naturalia*, a more or less completely ignored part of his natural philosophy and of his work in general. Specifically, the access to Buridan's *Parva naturalia* gave me the opportunity to explore Buridan's theories of the origin of veins and blood, complexions, and bodily moistures, and, in a wider sense, his conception of the mechanisms of digestion and his ideas on the conditions for life and the causes of death. Moreover, as far as the concept of 'complexion' is concerned, this thesis gave me the occasion to consider a section of Buridan's commentary on the *De generatione et corruptione*, a recently edited text, which has received insufficient attention up to now. Third, my study of Buridan's natural philosophy has taken into account an unedited text of Buridan, i.e., his question-commentary on the *De secretis mulierum*, providing both the first critical edition of it (in Appendix A) and proof for its authenticity. My inquiry into the questions on the *De secretis mulierum* allowed me to shed light on Buridan's theory of generation and to provide the first outline and interpretation of the ideas that are developed in that text.

In brief, this thesis has provided us with new and more detailed knowledge of Buridan's natural philosophy by analyzing various topics related to the understanding of the animal life cycle (birth, growth, reproduction, and death), and by framing this analysis in a more general consideration about the relationship between natural philosophy and medicine. This inquiry has made it possible to add important new elements to our knowledge of Buridan's thought. Eventually, the 'portrait' of Buridan (especially of Buridan 'the natural philosopher') painted by Jack Zupko in 2003 has acquired some additional details and colours. The general result of this enhanced portrait reinforces the image of Buridan as a multifaceted and systematic author: he is aware of the contribution that other, less fundamental 'sciences' can provide to

philosophers in order to grasp natural phenomena, and this approach bear witness to his multidisciplinary approach of reality.

5.2.2. *A Sketched Research: the Interplay between Natural Philosophy and Medicine in the Parisian Faculty of Arts*

In the footsteps of Jole Agrimi, this thesis aimed at providing some elements for a future more elaborate reconstruction of the use of medicine in the Parisian faculty of Arts. In the Parisian context, the teaching of natural philosophy and medicine were more separate than in the universities of the south of Alps. Up to now, much has been done to outline the relationship between natural philosophy and medicine in the late Middle Ages, especially in sofar as the presence of natural philosophical issues in medical authors is concerned. This applies particularly to medical authors working in the Italian universities, where medical theorists were institutionally attached to the Arts, especially to natural philosophy. Nevertheless, much less has been studied on the other side, namely on how and to what extent 'genuine' Artists, i.e., scholars working at the faculty of Arts of Paris, who were not professionally engaged in medicine, included medicine in their works on natural philosophy. This thesis went exactly in this second, and less frequented, direction. However, much more work has to be done in order to investigate the relationship between natural philosophy and medicine in Parisian Arts masters such as, for example, Nicole Oresme, Albert of Saxony, and Marsilius of Inghen (to stick at the most important names of the so-called 'Buridan's school').

My thesis has proposed a parallel analysis of Buridan, Oresme, Albert of Saxony and Marsilius' texts only for the topic of the well-tempered mixture, which involves the concept of 'complexion'. At least that case study suggested that Buridan sketched out a way of dealing with natural philosophical topics with the aid of medical ideas and doctrines that was followed, and further developed, by the other aforementioned masters of the Parisian 'network'. This case study, then, confirms Jole Agrimi's intuition according to which Buridan would be the most direct 'predecessor' of a new trend characterizing the Parisian Faculty of Arts in the fourteenth century, which paid attention to the special sciences, for example medicine, in the framework of natural philosophy.

At the same time, Agrimi claims that, differently from the younger authors

> Le plan où il [Buridan] se situe n'est pas tellement celui d'une intégration concrète de doctrines déterminées, mais plutôt celui de la confrontation

> théorique et épistémologique et du rapport institutionnel entre deux traditions et deux communautés, considérées davantage comme séparées que comme autonomes.[1]

This thesis provided evidence for the fact that Buridan did not just make 'a theoretical and epistemological comparison' or, even worse, a confrontation 'between two traditions considered more as separated than as autonomous', but that he established a consistent and lively dialogue with the medical tradition and with medical ideas, doctrines, and debates in order to provide his audience with a more precise description of the biology of living organisms. The data at our disposal on other fourteenth-century Parisian Arts masters are yet insufficient to determine which are the differences between them and Buridan, or between themselves. Neither do we have enough elements to measure Buridan's influence on these authors yet. Nevertheless, it seems safe to affirm that Buridan established that 'intégration concrète' of medicine in his works on natural philosophy that Agrimi denied. Whether or not (and if so, in which ways) the other authors (perhaps following in the footsteps of Buridan) managed to bring about this integration more consistently and extensively than Buridan is something that needs to be further determined. The case of 'complexion' analyzed in this thesis constitutes the most promising starting point for such an inquiry.

In and outside the Parisian Faculty of Arts and the so-called 'Buridan's school', a further examination of the relationship between natural philosophy and medicine in the late Middle Ages will require an thorough analysis of the commentaries on the *Parva naturalia*. These treatises, in fact, are the most important source to study how philosophers made use of medicine in their writings on natural philosophy. As remarked in the 'Introduction', our knowledge of these treatises has progressively improved in the last years, but a lot still needs to be done in this field. This thesis, with the analysis and interpretation of relevant and unexplored sections of Buridan's *Parva naturalia*, has hopefully made an important first step forward. It has particularly shown how significantly the commentaries on Aristotle's little treatises on nature provide us with a picture of the interaction between natural philosophy and medicine.

1 See J. Agrimi, 'Les *Quaestiones de sensu* attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert', cit., 200.

5.2.3. *Buridan: A Man of his Times*

As pointed out by Edith Sylla, there is a tendency still persisting in scholarship to detach Buridan's thought from its own time, to search for ground-breaking 'modernity' in his theories, i. e., to see Buridan as a 'precursor' of modern science, and, ultimately, to construct a pre-oriented research project selecting Buridan's texts and considering them relevant only in sofar as they can be framed in more general discussions on contemporary philosophical topics and debates. This trend has made an important contribution to clear great space to Buridan in the history of medieval philosophy. Nevertheless, this way of addressing Buridan's thought runs the risk of misinterpretation of some of his theories, an overestimation of his 'modern' doctrines, and, more importantly, an underestimation and negligence of extensive parts of his work. My research has been inspired by the idea of presenting '... Buridan's text on its own terms and in relation to its own time and place', to use Edith Sylla's words.[2] The topics addressed in this study have been selected in order to unearth unexplored aspects of Buridan's thought, not necessarily and *a priori* linked to an alleged 'modernity' of Buridan, neither to contemporary philosophical debates.

The theories contained in the commentaries on the *Parva naturalia*, the *De secretis mulierum*, and the second book of the *De anima* (especially where biological topics are concerned) can strike our modern sensibility and appeare meaningless. However, they are part and parcel of Buridan's thought and necessary to coherently understand his philosophical thought. It is exactly by studying these texts, and by leaving aside the prejudice that they are 'out-of-date' or irrelevant to contemporary philosophical or scientific issues, that we can have a more adequate and complete picture of Buridan's philosophy. Buridan is not just the great logician and the theorist of *impetus*, he is not necessarily the 'modern' author that recent scholarship has identified. He is also the philosopher who inquired into biology of living organisms with the instruments and interpretative models of the natural philosophy and medicine of his time. Some recent studies on Buridan's metaphysics have argued that we cannot detach Buridan from the framework of Christian theology and faith.[3] The present thesis has shown the richness of Buridan's natural philosophy, besides the more famous theories of his physics, and has placed it in the framework of the natural philosophy and medicine

2 See *supra*, 17–18.

3 See *supra*, 3.

of his time. This has given us the occasion to see how Buridan built his image of the living organism at the crossroads between the Aristotelian natural philosophy and the medical tradition.

This study has confirmed that Buridan was a multifaceted author, using a multidisciplinary approach to various philosophical topics. The impression is, ultimately, that this intelligent multidisciplinary approach is inspired by a search of what, in Buridan's eyes, is a *true* description of the biology of the living organism. In order to reach this aim, Buridan invested his intellectual resources in establishing a dialogue between the authorities, the traditions and the sources at his disposal. In doing so, Buridan achieved the task of harmonizing the natural philosophical and medical authorities, a common trait of Late medieval discussions on biology. Buridan's intelligence emerges is his capacity of turning the operation of harmonization into a further willingness of providing a broad, systematic, and personal description of the biology of the living organism. This capacity and approach that Buridan shows in his natural philosophical texts on the nature and operations of the body inscribes Buridan in the set of those medieval philosophers able to grasp more than others how to interpret the traditions and use them to provide a detailed and insightful picture of reality.

In other words, Buridan is not so much inspired by a search of originality and innovation as such. Originality and innovation is not necessarily what we have to search for when studying Buridan's texts. As a medieval author, he is leading what has been called 'un' ermeneutica veritativa',[4] a hermeneutics of the (authoritative) texts that ultimately pursues the truth. In the case of Buridan, the hermeneutics of the natural philosophical and medical traditions, applied in order to describe the body and the living organism, is always turned into further and insightful personal readings of the phenomena he is describing.

4 G. Mura, *Ermeneutica e verità: storia e problemi della filosofia dell'interpretazione*, Città nuova, Roma 1990.

APPENDIX A

Iohannis Buridani
Quaestiones supra secreta mulierum
Cod. Erfurt, Universitätsbibliothek, CA Q. 299 (E)

Principles of the Edition

This appendix presents the first critical edition of John Buridan's *Quaestiones de secretis mulierum* according to manuscript Erfurt, Universitätsbibliothek, CA Q. 299 (E).[1] All abbreviations in the manuscript have been solved, with the exception of 'etc.' Orthography has not been adapted to the rules of classical Latin. Hence the edition maintains the ending -e, instead of -ae, for gen. and dat. sing. fem. and nom. plur. fem. The edition introduces the Renaissance u/v distinction (using, for example 'vel' instead of 'uel'). The division of the text into paragraphs, and the headings and numbering of the paragraphs, is made by the editor. Punctuation is according to modern conventions. Titles of the works referred to by Buridan are indicated in italics, and so are the other explicit references (for example 'huius' when it refers to pseudo-Albert the Great's *De secretis mulierum*, 'auctor' when it designates the author of the *De secretis mulierum*, 'ibidem', 'loco preallegato', 'in libro iam dicto', etc.). Cross-references within Buridan's text have not been specified, but a good number of them are listed in chapter 2 of this thesis to show the internal coherence of the text.[2]

The *apparatus criticus* at the bottom of the page contains rejected and uncertain readings in manuscript E. The *apparatus fontium* identifies references to the sources quoted in the text. Only explicit references have been identified. References to Aristotle's texts are identified by title, book, chapter, and pagination of the Bekker edition. References that also occur in the *Auctoritates Aristotelis* are indicated by AA, followed by the number of the Aristotelian work and the number of the relevant *auctoritas* according to the edition of Jacqueline Hamesse (e.g. 'AA 4: 41' refers to *auctoritas* 41 on the *De generatione et corruptione*: 'Motus solis et aliorum planetarum in obliquo circulo est causa generationis et corruptionis rerum inferiorum'). When relevant to the identification of Buridan's sources, and especially when Buridan

1 See *supra*, 36–47.

2 See *supra*, chapter 2, footnote 33.

directly quotes or paraphrases Aristotle's text, the exact references to the *translatio vetus* (*translatio Scoti*, ed. Van Oppenraaij) and the *translatio nova* (*translatio Guillelmi*, ed. Drossaart Lulofs) of the *De generatione animalium* are given. References to Averroes are identified by work, book, commentum, and folium according to the Giunta edition of 1562–1574.

The edition refers to the following sources:

Aristoteles, *De generatione animalium. Translatio Guillelmi (translatio nova)*, ed. H.J. Drossaart Lulofs, in: *De generatione animalium*, Desclée de Brouwer, Brugge-Paris 1966.

Aristoteles, *De generatione animalium. Translatio Scoti (translatio vetus)*, ed. A.M.I. Van Oppenraaij, Brill, Leiden 1992.

Aristoteles, *De partibus animalium. Translatio anonyma et Translatio Guillelmi de Morbeka*, ed. P. Rossi (Aristoteles Latinus 27/1–2.IV), edition in progress.

Averroes, *Aristotelis opera cum Averrois commentariis*, Venezia 1562–1574, repr. Frankfurt am Main 1962.

Boethius, *De consolatione philosophiae*, ed. L. Bieler, Brepols, Turnhout 1967.

Gregorius Magnus, XL *Homiliarum in Evangelia*, ed. J.-P. Migne, Paris 1857 (Patrologiae cursus completus. Series latina, 76), 1075–1312.

Hamesse, J., *Les* Auctoritates Aristotelis. *Un florilège médiéval. Etude historique et édition critique*, Publications Universitaires-B. Nauwelaerts, Leuven-Paris 1974.

Hippocrates, *Aphorismi*, ed. W.H.S. Jones, Harvard University Press, Cambridge, MA, 1931, 97–221.

Isaac Israeli, *Liber urinarum*, in: *Opera omnia*, Lyon 1515.

Johannes Buridanus, *Quaestiones super libros* De generatione et corruptione, ed. M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, Brill, Leiden 2010.

Johannes Buridanus, *Quaestiones super octo libros Physicorum Aristotelis (secundum ultimam lecturam)*, I–II, ed. M. Streijger and P.J.J.M. Bakker, Brill, Leiden 2015.

Pseudo-Albertus Magnus, *De secretis mulierum*, ed. J.P. Barragán Nieto, Brepols, Turnhout 2012.

Pseudo-Aristoteles, *Liber de Pomo. Versio latina Manfredi*, ed. M. Plezia, Panstwowe Wydawnictwo Naukowe, Warszawa 1960.

Pseudo-Aristoteles, *Secretum secretorum. Versio latina baconiana: Secretum secretorum cum glossis et notulis Rogeri Baconi*, in: *Opera hactenus inedita Rogeri Baconi*, V, ed. R. Steele, Oxford University Press, Oxford 1920.

The signs and abbreviations used in the *apparatus criticus* are according to the conventions recommended by the S.I.E.P.M.:[3]

add.	*addidit*
corr.	*correxit*
del.	*delevit*
inscr.	*inscripsit*
iter.	*iteravit*
lac.	*lacuna*
lin.	*linea*
marg.	*margo*
praem.	*praemisit*
sup.	*supra*
⟨...⟩	words supplied by the editor
[...]	words that should be deleted

3 See A. Dondaine, 'Abréviations latines et signes recommandés pour l'apparat critique des éditions de textes médiévaux', *Bulletin de Philosophie Médiévale*, 2 (1960), 142–149.

⟨QUESTIO PRIMA⟩

⟨*Utrum generatio animalium sit perpetua vel sempiterna*⟩

[1] Questio: utrum generacio animalium sit perpetua vel sempiterna. E 167r

[2] Arguitur quod non.

[3] Primo: motus celi non est perpetuus; igitur nec generacio animalium. Tenet consequencia, quia motus celi est causa perpetuitatis generacionis et corrupcionis istorum inferiorum, ut patet secundo D*e generacione*. Antecedens patet, quia habet contrarium, scilicet quietem; modo quidquid habet contrarium est corruptibile, et per consequens non est perpetuum, quia omnis corrupcio est a contrario, ut ⟨patet⟩ primo D*e generacione*.

[4] Secundo: celum non movetur; ideo generacio animalium non est perpetua. Tenet consequencia ut prius ex secundo D*e generacione*. Antecedens patet: si moveretur, hoc maxime esset motu locali; quod est falsum, quia non mutat locum sed semper in eodem loco movetur; modo mutacio de loco ad locum requiritur in motu locali sicut de motu alteracionis requiritur mutacio de qualitate ad qualitatem.

[5] Tercio: materia prima est corruptibilis; ideo generacio animalium non est perpetua. Tenet consequencia ex primo D*e generacione*, quia propter materiam primam esse perpetuam generacio est perpetua. Antecedens patet, quia materia prima est que in rei veritate generatur, ut dicit Commentator primo P*hisicorum*; modo quidquid generatur est corruptibile.

[6] Quarto: nulla mutacio preter motum localem est perpetua, ut patet octavo P*hisicorum*; ergo nec generacio animalium, cum sit mutacio substancialis.

[7] Quinto per inductionem: nulla generacio animalium est perpetua, quia nec generacio istius animalis, et sic de singulis inductive.

---

1 questio] incipiunt questiones super secreta mulierum … ? … *inscr. in marg.* E **12** loco[1]] locu E **21** substancialis] etc. (?) E

---

5 Aristoteles, D*e generatione et corruptione*, II.10, 336a32 (AA, 4: 41) **8** Aristoteles, D*e longitudine et brevitate vitae*, 3, 465b4–5 (AA, 7: 107) **10** Aristoteles, D*e generatione et corruptione*, II.10, 336a32 (AA, 4: 41) **16** Aristoteles, D*e generatione et corruptione*, I.4, 320a2–3 (AA, 4: 9) **18** Forsan Averroes, I*n* Physicam I, comm. 82, 46vaK–L; sed vide I*n* Physicam I, comm., 64, 38vaI **21** Aristoteles, P*hysica*, VIII.8, 261b25–265a10

[8] Oppositum patet per autorem capitulo primo.

⟨Divisio quaestionis⟩

[9] In questione primo videndum est in generali quomodo generaciones in istis inferioribus sunt perpetue, et si sint, qualiter hoc intelligitur. Secundo videtur de quesito.

⟨Articulus primus⟩

[10] Quantum ad primum sciendum quod secundum fidem concedendum est quod nulla generacio sit perpetua sicut nec perpetue est vel fuit vel erit generacio, et hoc principaliter in creaturis. Quod patet, quia ante mundi creacionem, sicud credimus, nulla erat generacio creature nec alterius. Sed questio intelligitur sub condicione, scilicet si mundus fuisset perpetuus, sicud opinabatur Aristotiles, quid diceretur ad questionem, nichil curando de fide, sed supponendo quod mundus fuisset eternus et erit et loquendo de generacionibus naturalibus istorum inferiorum.

[11] Notandum est, sicud patet in primo De *generacione*, quod duplex est generacio: quedam est simpliciter, sicud generacio forme substancialis, alia est secundum quid, scilicet accidentis.

[12] Tunc est prima conclusio quod, si motus celi fuit perpetuus, generacio secundum quid fuit perpetua. Quod patet, quia motus celi non videtur aliud esse, ut apparet, nisi quedam generacio et corrupcio, cum continue in spera corruptibilium in una parte generet lumen vel caliditatem et in alia parte illa corrumpat; modo tales sunt generaciones secundum quid, ut dictum est.

[13] Tamen principaliter videndum est de generacione simpliciter. Et illam esse perpetuam posset ymaginari tripliciter. Uno modo quod generaciones sint perpetue, scilicet quod ante omnem generacionem fuit alia generacio precedens et post omnem erit alia. Secundus sensus est quod semper fuit aliqua generacio et semper erit aliqua generacio. Tercius est quod generacio est perpetua sic quod aliqua generacio semper fuit vel aliqua semper erit, et ita de tempore presenti. Et similiter de corrupcione istud possit intelligi.

---

13 generacionibus] istorum *add. necnon del.* E **26** aliqua] alia E

---

1 Ps.-Albertus Magnus, De *secretis mulierum*, 218.18 **15** Aristoteles, De *generatione et corruptione*, I.3, 319a17–30

[14] Tunc est secunda conclusio quod primo modo generacio est perpetua et concederet Aristotiles supposita eternitate mundi. Et hoc probatur primo D*e generacione* ex parte materie, quia semper oportet generacionem unius esse corrupcionem alterius vel aliorum, aut formaliter aut concomitative, et e converso corrupcionem unius esse generacionem alterius vel aliorum; igitur ad illum sensum generaciones sunt perpetue. Antecedens patet pro tanto, quia materia prima non potest esse sine forma substanciali nec simul habere plures. Tenet consequencia, quia, ut probatur primo *Celi*, omne generatum quod existit corrumpetur et omne corruptibile quod existit fuit genitum. Tunc capiatur aliquod compositum genitum et sequitur quod cum eius generacione fuit corrupcio cuiusdam alterius et illud alterum fuit ante genitum; eciam cum corrupcione illius alterius quod fuit ante genitum prefuit aliud, et sic in infinitum; igitur et sic inducendo ante omnem generacionem fuit alia generacio. Similiter a parte post aliqua substancia genita corrumpetur | et E 167v
cum eius corrupcione erit generacio alterius, quod iterum corrumpetur et aliud generabitur, et sic in infinitum; igitur post omnem generacionem erit generacio. Et ad istum sensum est verum quod perpetua est generacio vel e contra.

[15] Tercia conclusio: quod secundo modo intelligendo generaciones sunt perpetue. Probatur quia: semper apparent fontes fluere; quod non esset, nisi semper esset generacio aque in visceribus terre. Similiter semper sol et astra moventur super terram et mare; et sic semper sol ⟨et astra?⟩ elevant a mari aliquas partes terre vel aque eas corrumpendo et generando ex eis fumos et vapores, ut patet primo *Meteororum*; ergo semper sine interrupcione temporis in hoc mundo fiunt generaciones et corrupciones. Et causa istius patet secundo D*e generacione*, quia motus solis in circulo obliquo et aliorum planetarum, qui planete convertuntur ad unum tropicum et ibi generando aliqua in una parte terre corrumpunt generata quando moventur et declinant versus alium tropicum.

[16] Quarta conclusio et ultima: quod tercio modo generacio non est perpetua. Probatur quia: omnis generacio est inter certos terminos, scilicet de non esse rei ad esse ipsius, et nulla talis mutacio est perpetua, ut patet inducendo. Et per hoc solvuntur due ultime raciones.

[17] Sed contra hoc arguitur quia: supponendo quod elementa fuerunt semper et quodlibet istorum semper generabatur secundum partes et similiter

---

3 Aristoteles, D*e generatione et corruptione*, I.3, 318a23–25 8 Aristoteles, D*e caelo et mundo*, I.12, 282b1–5 22 Aristoteles, *Meteora*, I.4, 341b6–11 (?) 23 Aristoteles, D*e generatione et corruptione*, II.10, 336a32 (AA, 4: 41).

corrumpebatur, igitur alica generacio semper fuit; et sic consimiliter argueretur de generacione parcium Secane.

Dicendum quod, si mare semper fuisset, posset concedi quod generacio maris semper fuit, et non solum quod semper fuit generacio maris. Tunc, sicud patet ex secundo D*e generacione*, et sicud diceret Philosophus, nulla generacio alicuius corporis tocius simul demonstrati fuit semper. Et in hoc est differencia inter motum celi et generacionem, quia nullum corpus totale simul demonstratum generabatur semper, sed spera celestis tota simul demonstrata movebatur semper.

[18] Et hoc de primo, supposita eternitate mundi. Et consimiliter possent declarari predicta de ista proposicione: 'corrupciones sunt perpetue'.

⟨Articulus secundus⟩

[19] Quantum ad secundum patet faciliter ex dictis quid sit dicendum.

[20] Et ideo est prima conclusio quod generacio animalium est perpetua sic intelligendo quod ante omnem generacionem animalium fuit alia generacio animalium et post quamlibet erit alia, semper supposita eternitate mundi. Conclusio sic intellecta probatur quia: semper fuit animal et semper erit animal; ideo generacio animalium est perpetua. Tenet consequencia, quia nullum animal singulare est perpetuum, ut ⟨patet⟩ secundo D*e generacione animalium*, cum omne animal sit generabile et ante quodlibet animal fuit aliud, quod similiter generabatur, et post quodlibet erit aliud per simile. Antecedens patet, quia non videtur quod genus ita nobile vel perfectum omnibus speciebus specialissimis fuisset privatum aliquando nec erit post, ut satis declarat Philosophus in principio secundi D*e generacione animalium*.

[21] Secunda conclusio: quod generacio animalium non est perpetua sic quod semper fuit alica generacio animalium et semper erit alica generacio animalium, scilicet sine interrupcione temporis. Et licet ista conclusio non sit demonstrabilis, potest tamen probari quia: in generacione instantanea, sicud hominum, non semper fuit alica generacio hominis nec erit, ymo inter hominum generaciones fuerunt interrupciones temporum in quibus nullus homo generabatur. Et consimiliter argueretur de generacionibus aliorum animalium. Sed de aqua

1 corrumpebatur] corrumpebabatur (!) E 10 declarari] declari (!) E 22 ut] et E

5 Cf. Johannes Buridanus, *Quaestiones super libros* De generatione et corruptione, II.13, 258.21–259.4
18 Aristoteles, D*e generatione animalium*, II.1, 731b33 23 Aristoteles, D*e generatione animalium*, II.1, 731b30–732a1

et aere et aliis que habent successivam generacionem in suis partibus quantitativis bene concederetur quod semper fuit generacio aeris aut aque aut ignis aut plante etc.

[22] Tercia conclusio: quod generacio animalium non est perpetua intelligendo quod alica generacio animalium fuit semper vel erit semper. Probatur quia: omnis talis generacio aliquando cessat, ut patet inducendo, et per consequens nulla talis est perpetua.

⟨Ad rationes⟩

[23] Ad raciones.

[24] Ad primam: negatur antecedens. Ad probacionem: dicitur quod in celo non est contrarietas proprie dicta, scilicet positiva. Et si dicatur: omnis motus est de contrario in contrarium, ut patet quinto *Phisicorum*; ergo et in motu celi – dicitur quod ibi est contrarietas talis que sufficit ad motum, et hoc large capiendo 'contrarietatem'.

[25] Ad secundam: negatur antecedens. Ad probacionem: conceditur quod movetur motu locali. Ad probacionem quod non ('quia non mutat locum'): verum est secundum totum, sed bene secundum partem; et hoc sufficit. E 168r

[26] Ad terciam: negatur antecedens, ut patet in fine primi *Phisicorum*. Ad auctoritatem Commentatoris: dicitur quod ipsa generatur subiective, quia ipsa est cuiuslibet transmutacionis subiectum, ut patet *ibidem*; et ita intellexit Commentator; sed non terminative, scilicet quod terminet generacionem, quia sic solum forma generatur et non materia.

Alie due sunt solute, que solvuntur per secundum articulum.

---

12 Aristoteles, *Physica*, V.2, 226b2–3 (AA, 2: 157) 18 Aristoteles, *Physica*, I.9, 192a25–34 20 Aristoteles, *Physica*, I.9, 192a25–34; cf. *De generatione et corruptione*, I.4, 320a2–3 (AA, 4: 9)

⟨QUAESTIO SECUNDA⟩

⟨*Utrum generatio hominis sit perfectissima*⟩

E 168r [1] Questio secunda: utrum generacio hominis sit perfectissima.

[2] Arguitur quod non.

[3] Primo quia: perfectio in causis arguit perfectionem in effectibus, et maior maiorem; modo aliqua sunt animalia preter hominem que generantur a perfectiori et nobiliori causa, quia a perfectiori constellacione; ergo talis animalis generacio erit perfectior quam hominis.

[4] Secundo: materia prima in omnibus generatis est eiusdem racionis, ut patet primo *Phisicorum* et primo *De generacione*; ergo nec unum generatum erit perfectius alio, ut homo asino.

[5] Tercio quia: multociens in specie humana generantur monstra, ut videbitur post et patet *in textu*; que sunt peccata in natura, ut dicitur in primo *Phisicorum*; ergo generaciones talium hominum sunt minus perfecte quam generaciones animalium non monstruosorum.

[6] Oppositum patet *capitulo primo*.

⟨Divisio quaestionis⟩

[7] In questione primo videndum est in generali de perfectione et excellencia hominis super alia animalia. Secundo ex illis faciliter videbitur de quesito.

⟨Articulus primus⟩

[8] Quantum ad primum in generali Aristotiles in *Secretis secretorum* comparat ipsum hominem ad omnia animalia ostendendo ipsum esse perfectiorem. Unde

3 in effectibus] imperfectibus E 9 ut] ergo E | asino] *seu* a simili (?) E 20 ostendendo] (?) E

8 Cf. Aristoteles, *Physica*, I.7, 189b30–191a22 | Cf. Aristoteles, *De generatione et corruptione*, I.1, 314b25–315a2 11 Ps.-Albertus Magnus, *De secretis mulierum*, 390 et seq. | Aristoteles, *Physica*, II.8, 199b4 14 Ps.-Albertus Magnus, *De secretis mulierum*, 222 19 Ps.-Arist., *Secretum secretorum* (versio latina baconiana, 143)

dicit: 'non creavit Deus gloriosus creaturam sapienciorem homine et non collegit in aliquo animali quod collegit in eo.' Et sequitur quod universaliter non reperitur animal nec vegetabile, nec origenale nec minerale, nec celum nec planeta nec aliquod ens de omnibus habens aliquod proprium quin illud proprium inveniatur in homine. Et ideo dictus est homo minor mundus.

[*9*] Ex quo apparet in generali quod homo convenit cum omnibus que sunt in maiori mundo. Primo enim convenit cum supremis creaturis et intelligenciis propter sapienciam qua communicant, quia dicitur 'non creavit Deus sapienciorem creaturam homine.' Secundo ⟨convenit⟩ cum animatis anima [seu scilicet] sensitiva, quia non collegit in alico animali quod in eo collegit. Tercio ⟨convenit⟩ cum animatis anima vegetativa, quia non reperitur animal nec vegetabile. Quarto ⟨convenit⟩ cum inanimatis. Quorum multiplex est differencia. Quedam enim sunt simplicia, ut elementa; et quantum ad ista dicit 'nec origenale'. Elementa enim sunt origenalia mixtorum. Quedam sunt inanimata mixta, ut lapides et metalla; et quantum ad ista dicit 'nec minerale.' Quinto homo convenit cum superioribus. Quorum quedam sunt incorruptibilia, sicut corpora celestia; et quantum ad ista dixit 'nec celum nec planeta'. Quedam autem ⟨sunt⟩ generabilia et corruptibilia, sicut impressiones; et propter illas dixit 'nec signum', quia impressionum quedam sunt signa, sicud cometa que significat mortem regum, bella et pestillencias; et propter istam convenienciam antiqui philosophi hominem vocaverunt 'microcosmum'. Nam in homine sunt due partes vel regiones, scilicet superior et inferior. Superior est capud, et assimilatur celo primo propter situm, quia supremum; secundo propter figuram, quia rotundum; tercio propter ornatum, quia sicut celum sideribus ita caput sensibus est ornatum; quarto propter officium, quia capud regit omnia que sub ipso sunt et influit membris sensum et motum sicut celum inferioribus. Inferior pars hominis sicud pedes assimilatur regioni elementari, quia utraque est alteracioni continue pervia et generacioni deputata. Omni ergo creature aliquod commune habet homo, ut dicebat beatus Gregorius. Et ideo dicit Philosophus in primo D*e generacione animalium* quod partes hominis sunt create et composite secundum creacionem et situm tocius mundi. Et ideo merito dicebatur *ibidem* quod nobilissimum et altissimum apud nos magis animal est homo.

3 planeta] planta E 7 intelligenciis] intelligenciam E 8 communicant] communicat E 21 microcosmum] minimocrosmum (?) E 22 et] *del.* (?) E

8 Ps.-Arist., *Secretum Secretorum* (versio latina baconiana, 143) 28 Gregorius Magnus, *In Evang.* 2.29.2, 1214 29 Aristoteles, *Historia animalium*, I.15, 494a26–29 (AA, *9*: 5) 31 Aristoteles, *Historia animalium*, I.7, 491a22–23 (AA, *9*: 3)

Secundo sciendum magis in speciali quod homo principaliter componitur ex duobus, scilicet ex corpore et anima. Racione corporis sunt due partes in homine, sicud dictum fuit. Ex parte anime homo dicitur racionalis, et per hoc homo differt
E 168v ab aliis animalibus. Quod patet per Philosophum in epistola | et Allexandrum dicentem 'concupiscencia et ira utuntur omnia animalia, racione autem nullum nisi homo.' Et ideo sequitur *ibidem*: 'eos que racione omnia agunt omnes laudamus, eos vero qui sine racione aliquid faciunt tamquam stultos odimus.' Et propter hoc dicebatur primo *Pollitice*: 'homines intellectu et racione vigentes natura sunt aliorum domini et rectores,' et merito, quia homo secundum intellectum operans et hunc curans optime dispositus est et Deo amantissimus esse videtur, ut dicitur decimo *Ethicorum*. Et ideo dicit Boecius quod homines mente Deo sunt similes. Quantum magis ergo animalibus que in nulla comparacione sunt magis perfecta Deo.

⟨Articulus secundus⟩

[10] Quantum ad secundum ⟨dicitur⟩ quod duplex est perfectio, scilicet essencialis – et tunc illud dicitur perfectum quod est in debito gradu et ordine encium et cui nichil deficit sibi debitum inesse secundum propriam speciem. Et isto modo, ut patet primo *Ethicorum*, equus dicitur perfectus vel eciam homo qui est felix. Secundo modo dicitur perfectio accidentalis et secundum quid, scilicet secundum denominacionem accidentalem, qua posita vel non posita, illud remaneret in esse, sicud aliquid diceretur perfecte album vel perfectus faber. Et adhuc utroque modo dicitur dupliciter. Uno modo: cui nichil deest debitum inesse secundum quod huiusmodi, sicut scilicet secundum quod homo vel secundum quod albus. Et hoc habet latitudinem et potest esse perfectum magis et minus, sicut homo vel faber. Alio modo cui nichil deficit nec eciam potest aliquid addi nec ymaginari perfectius. Et hoc dupliciter: vel in sua specie, sicud albedo in summo, vel qualitercumque, sive in sua specie sive in alia, ita quod nichil potest ymaginari perfectius neque melius; et illo modo nichil preter solum Deum est perfectum.

---

1 magis] et *add.* (*necnon del.?*) E | in] *seu* an E 2 partes] hominis scilicet *add. necnon del.* E 6 omnes] … ? … *add. necnon del.* E 12 magis[2]] minus E 15 quantum] in *praem.* E 21 adhuc] ad hoc E 23 scilicet] *del.* (?) E 28 est] esse E

---

5 *Rethorica ad Alexandrum*, 1, 1421a10–12 (AA, 18: 5) 8 Aristoteles, *Politica*, I.2, 1252a31–32 (AA, 15: 1) 11 Aristoteles, *Ethica ad Nicomachum*, X.9, 1179a 22–24 (AA, 12: 218) | Boethius, *De consolatione philosophiae*, II, P5, 26 (AA, 25: 21) 18 Forsan Aristoteles, *Ethica ad Nicomachum*, I.7, 1097b21–1098a17

[11] Tunc comparando generaciones hominis solum ad generacionem aliorum animalium est conclusio quod generacio hominis est perfectissima. Probatur: perfectioris generati generacio est [perfectioris] perfectior; sed homo est perfectissimum generatum inter alia animalia; ergo eius generacio est perfectissima. Maior patet, quia plura melius disposita requiruntur in productione effectus nobilioris quam minus nobilis. Minor patet ex predictis. Et confirmatur quia: homo excedit omnia alia animalia, ut dictum est; ergo eius generacio est perfectissima. Tenet consequencia, quia operaciones hominis sunt perfectiores quam aliorum animalium. Antecedens patet, quia homo est dignissima creaturarum, ut dicitur in libro *De pomo*. Tercio, quia homo habet plures operaciones magis perfectas quam aliquod animal; igitur generacio ⟨eius⟩ est perfectissima. Tenet consequencia, quia operacio arguit forme nobilitatem. Antecedens patet, quia homo intelligit, sentit et vegetatur et mutatur secundum locum; que in nullo animali alio reperiuntur; et ideo homo dicitur rex animalium.

⟨Ad rationes⟩

[12] Ad raciones.

[13] ⟨Ad primam⟩: conceditur maior. Et quando dicitur quod aliqua animalia generantur etc., verum est a causa mediata. Sed nullum animal generatur a nobiliori et perfectiori causa immediata quam homo.

[14] Ad secundam: conceditur antecedens. Et negatur consequencia, quia perfectio animalium vel effectuum non provenit principaliter ex materia prima, sed a maiori vel minori perfectione forme substancialis et quibusdam aliis, ut dictum est.

[15] Ad terciam dicitur quod natura de possibilibus producit quod melius est. Et ideo monstruosissimus homo esset omni animali ⟨alio⟩ ab homine perfectior. Aliter dicitur quod monstruositas est defectus perfectionis accidentalis. Et de hac non oportet quod generacio hominis sit perfectissima, sed de essenciali solum etc.

12 forme] formam E 17 dicitur] *seu* dicit (?) E 20 et] *iter.* E 21 effectuum] affectuum (?) E

10 Ps.-Arist., *Liber de Pomo* (versio latina Manfredi, 37, 1.2)

⟨QUAESTIO TERTIA⟩

⟨*Utrum embryo generatur ex spermate viri et menstruo mulieris*⟩

E 168^{v} [1] Questio tercia: utrum embrio generatur ex spermate viri et menstruo mulieris.

[2] Arguitur quod non.

[3] Primo: hoc maxime esset propter mixtionem spermatis cum spermate. Consequens est falsum per Aristotilem primo D*e generacione animalium* dicentem: 'fetus non generatur ex permixtione duorum spermatum'. Tenet consequencia, quia dicit *autor* quod ex semine maris et femelle fiat unum.

[4] Secundo: hoc esset propter delectacionem femine cum masculo. Quod est falsum, quia dicitur *loco preallegato* quod accidit mulieres concipere sine delectacione.

[5] Tercio: si sic, sequeretur quod sperma viri conmisceretur semini mulieris. E 169^{r} Quod est falsum per Philosophum *ibidem*, capitulo ultimo: 'sperma | non est pars generati vel concepti, sicud nec carpentarius pars domus, sed est sicut motor et forma'. Tenet consequencia per *autorem* in littera.

[6] Quarto: tunc ex semine maris et femelle fieret unum. Quod est falsum, quia per Aristotilem in D*e partibus animalium* in omnibus viventibus frigidum non est a natura, sed privacio nature; modo menstruum est frigidum; et ideo est nivei coloris, et talis color attestatur super frigiditatem.

[7] Oppositum patet *capitulo secundo* et in primo D*e generacione animalium*.

---

6 autor] *seu* maior (a^{or}) E **13** autorem] *seu* maiorem (a^{re}) E

---

4 Aristoteles, D*e generatione animalium*, I.1, 715a4–5, 7 (AA, 9: 179) **6** Ps.-Albertus Magnus, D*e secretis mulierum*, 228 **8** Aristoteles, D*e generatione animalium*, I.19, 727b6–9, 33–728a2, 31–36 (AA, 9: 180) **11** Aristoteles, D*e generatione animalium*, I.21, 729a29, b4–8 (AA, 9: 181) **13** Ps.-Albertus Magnus, D*e secretis mulierum*, 232 **15** Aristoteles, D*e partibus animalium*, II.2, 649a18–19 (transl. Guillelmi) **18** Ps.-Albertus Magnus, D*e secretis mulierum*, 228–230 | Aristoteles, D*e generatione animalium*, I.2, 716a5–13

⟨Divisio quaestionis⟩

[8] In questione primo videndum est de quesito. Secundo de disposicione embrionis.

⟨Articulus primus⟩

[9] Quantum ad primum supponendum est primo, ut patet secundo De *generacione animalium*, capitulo tercio, quod omne quod fit necesse est fieri ex aliquo tamquam ex materia et ab aliquo tamquam a causa efficiente et aliquid tamquam compositum.

[10] Secundo supponitur quod nichil seipsum generat, ut dicitur *ibidem*, capitulo quarto.

[11] Tercio supponitur quod femella ad generacionem indiget masculo et quod ipsa ex se ipsa non generat, ut dicitur *ibidem* tractatu secundo, capitulo tercio.

[12] Et ideo primo sciendum quod masculus est animal quod in aliud generat, femella autem quod generat in se ipsam, id est ab alio recipiat, ut dicitur in primo De *generacione animalium*.

[13] Secundo sciendum quod quando vir et femella sunt in coytu, tunc, propter delectacionem que propter confricacionem membrorum nervosorum causatur, ex ambobus exit quedam substancia humida, que in homine dicitur 'sperma' et in muliere 'menstruum'. Et post emissionem ad unum locum congregatur, scilicet matricem, que postea clauditur, ita quod acus non posset intrare. Et continue illud commixtum crescit et augmentatur et consolidatur per elapsum temporis. Et illam recepcionem seminum in matrice vocamus 'concepcio' vel 'concipere', ut patet *in textu*. Et illud compositum ex spermate viri et menstruo mulieris proprie vocatur 'embrio'. De quo dicitur in quarto De *generacione animalium* quod embrio primo vivit vita plante, deinde animalis et post vita hominis.

[14] Tercio sciendum quod in spermate sunt calor solis et animalis non in actu, sed in potencia, ut dicitur in secundo De *generacione animalium*. Et ideo dicitur

---

9 secundo] ideo E 17 causatur] causarum E 25 animalis] animal (?) E

---

6 *Locus non inventus* 10 Aristoteles, De *anima*, II.4, 416b16–17 (AA, 6: 90) 12 Aristoteles, De *generatione animalium*, II.4–5, 741a 4–10 (transl. Guillelmi, 63–64) 15 Aristoteles, De *generatione animalium*, I.2, 716a 13–15, 22–25 23 Ps.-Albertus Magnus, De *secretis mulierum*, 232.25–27 24 Aristoteles, De *generatione animalium*, II.3, 736a35–36, b1–2, 12–13, 14–15 (AA, 9: 203) 27 Aristoteles, De *generatione animalium*, II.3, 737a6–8, 1–2 (AA, 9: 192)

secundo *Phisicorum* quod homo generat hominem et sol. Et per 'solem' intelliguntur corpora celestia, que influunt suas virtutes in corpus humanum. Similiter dicitur in secundo D*e generacione animalium* quod in emissione spermatis emictitur virtus nutritiva et sensitiva, que virtutes sunt in ipso non actu, sed in potencia.

[15] Quarto sciendum quod questio est difficilis propter discordiam medicorum et philosophorum, quia medici ponunt sperma viri ingredi substanciam fetus, phylosophi vero dicunt ipsum cum menstruo in concepcione in matrice recipi et post per calorem solis evaporabiliter exhalari. Et de isto videbitur post.

[16] Et ideo pro nunc est conclusio quod embrio generatur ex spermate viri et menstruo mulieris, sic intelligendo: quando est concepcio mulieris, necessario requiritur cuiuslibet semen et non unius tantum.

[17] Probatur quia: si solum semen sufficeret, sequeretur quod mulier sine viro posset concipere naturaliter. Consequens est falsum et contra Phylosophum in primo D*e generacione animalium* dicentem: 'femina non generat ex se, quia indiget principio motus, quod est ex mare'. Tenet consequencia, quia aliquando propter nimiam delectacionem sine viris mulieres proprium semen emicterrent, et tamen non concipiunt. Et ista racio non valet in viris propter carenciam loci in eis in quo sperma reciperetur. Et quia duplex semen requiritur, ideo dicit ⟨Philosophus⟩ in primo D*e generacione animalium*, capitulo ultimo, [dicit] quod vir dat formam et principium motus generato, femina vero corpus et materiam. Similiter dicitur in eodem primo: 'animalia itaque hec quidem ex combinacione fiunt masculi et femine et quibuscumque generibus est masculus et femina.' Et ideo dicitur *ibidem* quod propter hoc masculus et femella sunt principium generacionis, quia sperma ab ambobus segregatur.

[18] Deinde probatur in speciali quod requiritur sperma viri.

[19] Primo quia: dicitur in secundo D*e generacione animalium*, capitulo tercio, quod omnia habencia sanguinem fiunt ex spermate.

[20] Secundo arguitur racione Aristotilis *ibidem* quia: nisi homo vel embrio generetur ex spermate, sequitur quod masculus esset frustra. Quod est falsum,

---

4 ipso] ipse (?) E 18 quia] du (?) *add. necnon del.* E

---

1 Aristoteles, *Physica*, II.2, 194b13 (AA, 2: 65) 3 Aristoteles, D*e generatione animalium*, II.3, 736a31–736b15 14 Aristoteles, D*e generatione animalium*, I.21, 730a24–25 (transl. Scoti, 52) 19 Aristoteles, D*e generatione animalium*, I.2, 716a4–7; I.21, 729b18–20; I.22, 730b1 (AA, 9: 184) 21 Aristoteles, D*e generatione animalium*, I.1, 715a18–20 (transl. Guillelmi, 3) 22 Aristoteles, D*e generatione animalium*, I.2, 716a4–14 (transl. Guillelmi, 5) 26 Aristoteles, D*e generatione animalium*, II.1, 723b17–19 28 Aristoteles, D*e generatione animalium*, II.5, 741b3–5 (transl. Guillelmi, 65)

quia natura nichil facit frustra, ut patet *ibidem* et primo *Celi*. Et ideo concludit Philosophus in fine capituli tercii tractatus secundi: 'propter quod in talibus masculinum perficit generacionem; facit enim hoc sensitivam animam aut per seipsum aut per genituram' id est per sperma.

[21] Tercio: unum solum semen non habet principium anime; ergo embrio E 169^{v}
generatur ex duobus. Tenet consequencia. Antecedens patet in secundo D*e generacione animalium*, tractatu primo, capitulo septimo.

[22] Deinde probatur quod requiritur menstruum mulieris quia: nisi ⟨sic⟩, sequeretur quod virtus generativa non micteret menstruum ad matricem causa generacionis tamquam propter finem. Quod est falsum, ut patet secundo D*e generacione animalium*, tractatu secundo, capitulo primo. Tenet consequencia, quia non est alia racio quare ibi mictatur. Secundo dicitur in primo D*e generacione animalium*, tractatu secundo, capitulo septimo: 'itaque manifestum quod racionabiliter fit ex hoc generacio,' scilicet menstruo. Sed utrum post concepcionem sperma viri maneat vel non videbitur post; et similiter de modo.

[23] Et hec de primo.

⟨Articulus secundus⟩

[24] Quantum ad secundum, scilicet de disposicione embrionis, est sciendum, ut dicunt autores, quod in sex primis diebus est eius disposicio ad modum et colorem lactis aliquantulum spissi et coagulati, ut dicitur in secundo D*e generacione animalium*; et istum colorem generat calor naturalis in spermate viri dimissus et similiter calor matricis. Deinde in novem diebus per ulteriorem digestionem efficitur sanguis spissus. Postea in duodecim diebus fit consolidacio membrorum et incipiunt partes hominis generari. Hoc tempore toto transacto, incipit habere similitudinem hominis et disposicionem in decem et octo diebus. Et sic secundum aliquos sunt quadraginta quinque diebus. Quibus peractis, fetus disponitur et augmentatur usque ad septimum mense ad minus et undecimum ad maius, ut

20 coagulati] *in marg.* E 23 consolidacio] et *add. necnon del.* E

1 Aristoteles, D*e generatione animalium*, II.5, 741b5 (transl. Guillelmi, 65) | Aristoteles, D*e caelo et mundo*, I.4, 271a33 (AA, 3: 18); cf. Aristoteles, *Politica*, I.2, 1253a9 (AA, 15: 4); cf. Aristoteles, D*e anima*, III.8, 432b21–23 (AA, 6: 168) 2 Aristoteles, D*e generatione animalium*, II.5, 741b6–8 (transl. Guillelmi, 65) 7 Aristoteles, D*e generatione animalium*, II.3, 737a29–30 (transl. Guillelmi, 53) 11 Aristoteles, D*e generatione animalium*, II.3, 737a 18–24 (transl. Guillelmi, 55) 12 Aristoteles, D*e generatione animalium*, I.20, 728a26 (transl. Guillelmi, 33) 21 Aristoteles, D*e generatione animalium*, II.2, 735a30–735b3 (transl. Guillelmi, 50–51)

apparet in nono D*e historiis animalium*; et tunc nascitur fetus. Sed qualiter nutriatur et membra formentur, et que primo, videtur post.

⟨Ad rationes⟩

[**25**] Ad raciones.

[**26**] Ad primam: conceditur consequencia. Ad probacionem falsitatis consequencie: dicitur quod ibi accipitur 'sperma' large. Et ideo dicitur primo D*e generacione animalium* tractatu secundo, capitulo septimo quod menstrua sunt sperma non purum. Aliter dicitur quod Aristotiles loquebatur solum secundum opinionem aliquorum et voluit quod in mulieribus non esset sperma sicut in viris. Et ideo dixit *ibidem*: 'neque mixtis ambobus fit,' scilicet animal, ut aiunt quidam.

[**27**] Ad secundam: negatur consequencia. Et causa est quod non delectatur delectacio, quia in eis est humiditas habundans, quod, quia de natura est frigidum, ut patet primo D*e generacione animalium*, non causat delectacionem in mulieribus, quia delectacio causatur a calido; et tales mulieres secundum aliquos continue generant femellas et ut in pluribus sunt magis flemmatice quam alii.

[**28**] Ad terciam: conceditur consequencia. Ad probacionem falsitatis consequencie: dicitur quod, licet sperma non postea maneat in genito per processum temporis, tamen non repugnat quin requiratur et concurrat in principio ad concepcionem cum menstruo.

[**29**] Ad quartam: conceditur consequencia. Ad probacionem quod non ('quia frigidum etc.'): conceditur. Et quando dicitur quod menstruum etc., dicitur quod, licet sit frigidum in respectu spermatis, tamen non obstat quin participet aliqualem caliditatem, cum sit digestum.

18 temporis] tempus E

1 Aristoteles, *Historia animalium*, VII.4, 584a35–584b1 **7** Aristoteles, D*e generatione animalium*, I.20, 728a27 (transl. Guillelmi, 33) **10** Aristoteles, D*e generatione animalium*, I.19, 727b7 (transl. Guillelmi, 31) **13** *Locus non inventus*

⟨QUAESTIO QUARTA⟩

⟨*Utrum post conceptionem sperma viri maneat in genito vel ingrediatur substantiam fetus*⟩

[1] Utrum post concepcionem sperma viri maneat in genito vel ingrediatur substanciam fetus. E 169v

[2] Arguitur quod sic.

[3] Primo quia: nisi sic, sequeretur quod fetus nunquam assimilaretur patri. Quod est falsum per experigenciam. Tenet consequencia, quia non videtur per quid sibi assimilaretur nisi per sperma.

[4] Secundo: si non maneret in genito, sequeretur quod corrumperetur in simile vel in dissimile, quod est falsum. Non in simile, quia talis corrupcio esset frustra; nec in dissimile, quia nichil agit ultra suam speciem.

[5] Tercio: si non, sequeretur quod non quilibet homo naturaliter generatus generaretur ex semine patris et matris. Quod est falsum per autorem *in littera* et satis patuit in precedenti questione. Tenet consequencia, ex quo semen viri non ingreditur substanciam fetus.

[6] Quarto: sequeretur quod emissio spermatis in actu coytus esset ociosa. Quod est falsum, quia Deus et natura nichil faciunt frustra, ut patet primo *Celi*. Consequencia tenet, quia non videtur alius finis propter quem sperma emictatur in illo actu nisi quod ingrediatur substanciam fetus.

[7] Quinto: forma fetus necessario ingreditur substanciam fetus; sed sperma viri est forma fetus; igitur etc. Maior patet secundo *Phisicorum*, quia forma ingreditur substanciam tocius compositi. Minor declaratur quia: in generacione hominis vir dat formam, mulier vero materiam, ut dicitur primo D*e generacione animalium* versus finem; et ex hoc non videtur quod sperma viri ingrediatur substanciam fetus et sit forma fetus.

---

3 sic] non *sup. lin.* E 10 tercio] (?) E | non[1]] sic (!) E 22 et] *sup. lin.* E

---

11 Aristoteles, D*e generatione animalium*, I.2, 716a 5–13 15 Aristoteles, D*e caelo et mundo*, I.4, 271a33 (AA, 3: 18) 19 *Locus non inventus* 22 Aristoteles, D*e generatione animalium*, I.21, 730a25–30 (transl. Guillelmi, 38)

[8] Sexto: menstruum mulieris ingreditur substanciam fetus; ideo et sperma viri. Antecedens patuit prius et similiter in primo *De generacione animalium*, tractatu
E 170r secundo, capitulo septimo, | ubi dicitur: 'itaque manifestum quod racionabiliter ex hoc, scilicet menstruo, fit generacio'. Tenet consequencia per locum a minori, quia minus videtur de menstruo, cum sit minus dispositum quam sperma; et ideo dicitur *loco preallegato* quod menstruum est sperma non purum.

[9] Septimo: quod ingreditur substanciam embrionis, ingreditur substanciam fetus; sperma viri est huiusmodi; igitur etc. Maior patet, quia fetus generatur per agens intrinsecum; ergo quidquid est agens ipsius univocum et extrinsecum videtur ingredi substanciam eius. Minor patet primo et secundo *De generacione animalium*.

[10] Oppositum patet in fine primi [in] *De generacione animalium*. Similiter per hoc ⟨verbum⟩ autor⟨is⟩ capitulo secundo, ⟨ubi⟩ recitat discordiam medicorum et philosophorum.

⟨Divisio quaestionis⟩

[11] In questione primo videndum est opinio medicorum, secundo philosophorum et precipue Aristotilis. Tercio de concordia istarum opinionum. Et quarto erunt dubia.

⟨Articulus primus⟩

[12] Quantum ad primum supponendo primo, ut videbitur post, quod spermatis natura est calida et humida, ut dicitur in quarto *De generacione animalium*; et ideo dicitur in primo capitulo, sexto tractatu secundi quod sperma est superfluitas alimenti sanguinei. De quo dixerunt medici sicud Galienus et Avicenna ponendo conclusionem quod sperma viri ingreditur substanciam fetus. Quam probant sic: ex quo generantur partes subtiliores corporis illud ingreditur substanciam fetus; sperma viri est huiusmodi; igitur etc. Maior patet. Minor declaratur quia:

---

5 sperma] menstruum E 16 secundo] secunde E

---

2 Aristoteles, *De generatione animalium*, I.2, 716a4–7; cf. *De generatione animalium*, I.21, 729b18–20; I.22, 730b1 (AA, 9: 184) 6 Aristoteles, *De generatione animalium*, I.20, 728a27 (transl. Guillelmi, 33) 11 *Locus non inventus* 12 Aristoteles, *De generatione animalium*, I.22, 730b9–12 (transl. Guillelmi, 38) 21 Aristoteles, *De generatione animalium*, IV.4, 772b5 (transl. Guillelmi, 140)

secundum ipsos partes corporis sunt duplices, quedam grosse sicud ossa et nervi, alie subtiles sicut caro et vene. Modo secundum ipsos partes corporis grosse generantur ex menstruo mulieris; et racio est quia menstruum est frigidum et humidum, ut patet quarto De *generacione animalium*; et ideo dicitur *ibidem* quod menstruum est sperma indigestum; modo indigesta sunt frigida, ut patet quarto *Meteororum*, et frigidi est consolidare atque coagulare; ergo tales partes, cum indigeant forti consolidacione, generantur a menstruo. Sed partes subtiles generantur a spermate, quia spermatis natura calida est et humida, ut dicitur in quarto De *generacione animalium*; modo caliditatis est rarefacere et frigiditatis molescere; ideo partes que sunt rare et molles ex spermate generantur.

⟨Articulus secundus⟩

[13] Quantum ad secundum est opinio philosophorum et precipue Aristotilis in primo De *generacione animalium* capitulo ultimo quod sperma viri non ingreditur substanciam fetus. Et illum modum quidam declarant: unde dicunt quod sanguis menstruosus matris maneat in fetu et ingrediatur eius substanciam. Sed sperma viri non, sed tantum est subiectum deferens virtutem formativam que agit in menstruum ipsum coagulando, quia alias talis virtus non posset descendere in matricem ut ageret in menstruum nisi in subiecto humido et liquido, quod dicitur sperma. [14] Et illam conclusionem probat Aristotiles quia: artifex non ingreditur substanciam artificii; ergo sperma viri non ingreditur substanciam fetus. Tenet consequencia, quia sperma viri respectu fetus habet se sicut artifex respectu sui artificii. Antecedens patet, quia carpentarius non ingreditur substanciam domus, ut dicitur *loco preallegato*. Et confirmatur racione Philosophi *capitulo predicto*: nichil componitur ex movente et moto tamquam ex materia ipsum constituente; igitur nullus homo componitur ex spermate. Tenet consequencia, quia masculus secundum quod masculus est movens, scilicet per suum sperma; sed femina est passum et motum per suum menstruum, ut dicitur *ibidem*; igitur ista duo

8 natura] nature E

4 Aristoteles, De *generatione animalium*, IV.2, *767a2–6* (transl. Guillelmi, *126*) | Aristoteles, De *generatione animalium*, IV.5, *774a1* (transl. Scoti, *197*); Aristoteles, De *generatione animalium*, IV.5, *774a2* (transl. Guillelmi, *143*) 6 Aristoteles, *Meteororum*, IV, *379b12–13* 9 Aristoteles, De *generatione animalium*, IV.4, *772b5* (transl. Guillelmi, *140*) 13 Aristoteles, De *generatione animalium*, I.22, *730b9–12* (transl. Guillelmi, *38*) 23 Aristoteles, De *generatione animalium*, I.22, *729b16–17* (transl. Guillelmi, *36*) (AA, 9: 182) | Aristoteles, De *generatione animalium*, I.22, *730b9–12* (transl. Guillelmi, *38*) 27 Aristoteles, De *generatione animalium*, I.21, *729b12–17* (transl. Guillelmi, *36*)

non simul manent in fetu. Antecedens patet, quia lectus non componitur ex carpentario et ligno. Tercio confirmatur ex animalibus exanguibus quia: tunc sequeretur quod talia animalia emicterent aliquam superfluitatem spermaticam que fetui naturaliter inexisteret; quod est falsum, quia carent tali materia. Tenet consequencia, quia non videretur quid ex parte masculi materialiter maneret in fetu. Et ideo concluditur *ibidem*: 'quod enim in emictentibus operatur sperma in femella, hoc que in animali ipso caliditas et virtus operatur, inferente femella susceptivam particulam spermatis'. [15] Et ex isto patet qualiter masculus conferat ad generacionem, quia sperma emissum ab ipso non est materia fetus, sed solum sicut movens. Et hoc declarat Philosophus *ibidem* de anima que movet manus vel
E 170v aliam partem corporis, manus postea movent organa, deinde organa materiam. | Sic similiter est in animalibus emictentibus sperma, quia illo utuntur sicut organo; et sicut in organo derelinquitur aliquid artis, sic in spermate derelinquitur motus nature quo movetur ad formam. Et ideo propter istam opinionem est notandum quot modis ponendi est quod sperma habet quamdam virtutem activam et effectivam respectu fetus. Et ideo postquam sperma eduxit formam fetus una cum corporibus celestibus de potencia materie, tunc sperma viri exalatur virtute solis de matrice mulieris sicud vapor de terra vel aqua exalaret.

⟨Articulus tertius⟩

[16] Quantum ad tercium, scilicet propter concordiam istarum opinionum, est sciendum quod 'sperma viri' accipitur dupliciter: uno modo pro superfluo alimenti quod emictitur in coytu, secundo modo pro virtute formativa sibi inexistente in potencia. Et propter hoc probat Philosophus secundo D*e generacione animalium* quod fetus et sperma habent animam nutritivam virtute, sed non in actu.

[17] Tunc est prima conclusio quod sperma primo modo acceptum ingreditur substanciam fetus. [18] Probatur racione medicorum prius facta. Secundo: sperma sic acceptum aut exalatur virtute solis aut ingreditur substanciam fetus; sed non exalatur; igitur ingreditur substanciam fetus. Maior patet sufficienti divisione. Minor declaratur quia: si fieret exalacio, tunc fieret penetracio dimensionum, quod est falsum. Et tenet consequencia, quia, ut patet in *textu*, post generacionem

2 exanguibus] ex anguibus E

6 Aristoteles, *De generatione animalium*, I.21, 729b26–29 (transl. Guillelmi, 37) 10 Aristoteles, *De generatione animalium*, I.22, 730b15–18 (transl. Guillelmi, 38–39) 23 Aristoteles, *De generatione animalium*, II.3, 736b8–10; cf. *De generatione animalium*, II.3, 736b15, 21–25 (AA, 9: 189) 30 Ps.-Albertus Magnus, *De secretis mulierum*, 232.27–29

embrionis matrix undique clauditur, et quia sperma est corpus, ideo, si exalaretur, corpus spermatis penetraret corpus matricis. [19] Et si diceretur quod conclusio est contra Philosophum primo *De generacione animalium*, dicitur quod ipsa cepit sperma pro virtute formativa et non pro spermate materialiter accepto, scilicet pro superfluo emisso in actu coytus.

[20] Et ideo est conclusio secunda quod sperma secundo modo acceptum pro virtute formativa non ingreditur substanciam fetus. Probatur racionibus Philosophi ut prius. Secundo: si sic, sequeretur quod materia et efficiens coinciderent; quod est falsum, ut patet in secundo *Phisicorum*. Consequencia tenet, quia sperma illo modo acceptum est causa efficiens fetus. Et ideo dicitur primo *De generacione animalium* quod masculus confert generato principium motus, femella autem materiam. Et si dicatur: hoc est contra medicos – dicitur quod medici intelligunt de spermate primo modo capto scilicet pro superfluo alimenti.

⟨Articulus quartus⟩

[21] Quantum ad quartum est primum dubium: quare generatum ex nostro spermate dicitur nostrum natum, et generatum ex alia superfluitate, sicud sudore, egestione vel urina, ⟨non⟩ dicitur nostrum natum. Causa est quia nullum lesivum et superfluum debet dici nostrum proprie, sed extranea et alia a nostra natura; sed superfluitates putrefactionis et apostemata, si sint in corpore nostro, sint lesiva et mala; igitur ipsa nec generata ex eis debent dici nostra. Sic similiter vermes generati ex putrefactione egestionis et monstra non debent dici nostra. Sed oportet quod, si sit tale in actu et aptum natum tale generare sicud nos sumus, et quia hoc fit per sperma et non per aliam superfluitatem corporis, ideo generatum ex spermate nostro dicimus nostrum natum.

[22] Secundum dubium est: cum sperma sit illud ex quo generatur nostrum natum, et ex ipso fit caro, quare non honoramus ipsum. Causa est quia sperma non habet formam humanam actu; ideo ipsum non honoramus sicud neque aliquod aliud requisitum ad generacionem; sed postquam illam habuerit actu et ad hanc fuerit transmutatum, tunc illud dicemus natum nostrum et honorabimus ipsum.

13 capto] (?) E

3 Aristoteles, *De generatione animalium*, I.21–22, 729a34–730b31 (transl. Guillelmi 36–39) 9 Forsan Aristoteles, *Physica*, II.7, 198a22–32 11 Aristoteles, *De generatione animalium*, I.21, 730a27–28 (transl. Guillelmi, 38)

[23] Tercio dubitatur: quare in aliis animalibus genita magis assimilantur quam hominibus. Et causam istius ponit Philosophus in *Probleumatibus*, quia homo multipliciter disponitur secundum animam in coytu propter imaginacionem et nimiam delectacionem vel alias passiones; modo sic non est in aliis animalibus. Et ideo dicitur *ibidem* quod, sicut pater et mater fuerunt dispositi in predictis imaginacionibus, ita disponuntur et filii. Et ideo precipitur quod coeuntes non debent esse irati nec passionati, nec debent imaginari vilia vel turpia nec viles creaturas, ne sperma emissum vel menstruum recipiant malam impressionem. Similiter ad predictum dubium respondet Philosophus nono D*e generacione animalium*: dicit quod aliqui dixerunt quod a quo plus decinditur vel emictitur de spermate, illo magis similis efficitur fetus, sed si equaliter ab utroque eiceretur, fetus neutri assimilaretur. Et hoc dicentes concesserunt quod ab omnibus membris descinditur sperma; quod est falsum, ut patet *ibidem*. Et ideo dictum eorum non est verum.

E 171[r] [24] Quartum dubium est: propter quid aliqua animalia nata statim secuntur suos parentes, sicut pulli perdicium, alia vero tarde, sicut quedam quadrupedia, alia vero tarde vel vix, sicut homo, alia vero nunquam, sicud quidam serpentes. Causa est, ut dicitur in D*e probleumatibus*, quia alica animalia statim cum nata sunt, habent potenciam membrorum et naturalem congnicionem; et talia immediate secuntur suos parentes propter ista duo, quia in membris habent perfectionem et in sensu congnicionem. Alia sunt que non habent potenciam membrorum propter eorum temeritatem, molliciem et gravitatem; et illa non statim secuntur, sicud homines, licet habeant congnicionem; et ideo per aliquod tempus nutriuntur a parentibus. Alia sunt animalia que, licet habeant potenciam membrorum ad ambulandum, non tamen habent congnicionem sensus qua discernant inter proficuum et nocivum; et ista tarde secuntur, sicut patet de quibusdam quadrupedibus. Alia sunt animalia que carent potencia membrorum et congnicione; et illa nullo modo secuntur. Et ideo concludit Philosophus quod ad hoc quod animal statim sequatur parentes requiritur quod habeat ista duo simul, scilicet potenciam ambulandi in membris et congnicionem in sensibus.

---

7 vilia] *del.* (?) E 21 sensu] senseu E 26 quibusdam] quibus E 27 animalia] animalibus E | potencia] potenciam E 28 animal] animam E

---

2 Ps.-Aristoteles, *Problemata*, X, 891b32–37 5 Ps.-Aristoteles, *Problemata*, X, 891b32–37 10 Aristoteles, *De generatione animalium*, I.17, 721b15–24 (transl. Guillelmi, 18) 13 Aristoteles, *De generatione animalium*, I.18, 722a2–8 (transl. Guillelmi, 18–19) 18 Ps.-Aristoteles, *Problemata*, X, 894a30–36

[25] Ultimum dubium est: quare homo inter alia animalia maxime pervertitur. Causa est quia homo in principio maxime est consumptivus humidi aerei et diversas incurrit egretudines ipsum aliter et aliter disponentes, quibus carent alia animalia.

⟨Ad rationes⟩

[26] Ad raciones.

[27] Ad primam: negatur consequencia. Ad probacionem: dicitur quod † virtus ⟨tam⟩ que est in spermate quam a corporibus celestibus manet † et secundum influenciam habet virtutem generantis. Et ideo potest sibi assimilare generatum, ut dicunt aliqui.

[28] Ad secundam: conceditur consequencia, et dicitur quod corrumpitur utroque modo. Ad probacionem quod non: dicitur quod utrumque corrumpitur in dissimile secundum formam, quia alia est forma seminum et alia fetus. Et corrumpitur in simile secundum virtutem, quia semen decisum virtualiter assimilatur genito, quia aliter genitum non posset ulterius generare sibi simile. Et ideo patet quod ibi non est totalis similitudo nec dissimilitudo.

[29] Ad terciam: conceditur consequencia, si sperma nullo modo ingreditur substanciam fetus, nec materialiter, nec formaliter. Modo sic non est in proposito, quia sperma ingreditur materialiter, non autem formaliter, scilicet inquantum est causa efficiens.

[30] Ad quartam: negatur consequencia, quia, sicud dictum est, sperma materialiter acceptum est necessarium ad fetum in genere cause materialis, sed formaliter est necessarium in genere cause efficientis.

[31] Ad quintam: conceditur maior et negatur minor. Ad auctoritatem Philosophi: dicitur quod sic intelligitur quod vir dat formam, id est efficit formam.

[32] Ad sextam: negatur consequencia accipiendo 'sperma' formaliter, sed materialiter bene conceditur. Ad probacionem: dicitur quod disposicio talis menstrui sufficit fetui ut virtute formativa spermatis continue disponitur.

[33] Ad septimam dicitur. Ad maiorem: dicitur quod non oportet, quia embrio propter multas disposiciones et transmutaciones corrumpitur in fetu, ut videbitur post. Aliter solvitur ut dictum est etc.

⟨QUAESTIO QUINTA⟩

⟨*Utrum in conceptione fiat emissio seminis ex parte viri et femellae*⟩

E171r [1] Utrum in concepcione fiat emissio seminis ex parte viri et femelle.

[2] Arguitur quod non.

[3] Primo quia: dicitur primo D*e generacione animalium*: 'accidit mulierem concipere sine delectacione'; modo semen nunquam emictitur, ut videtur, nisi causetur delectacio; ergo a destructione consequentis, si non causatur delectacio, non emictitur semen.

[4] Secundo: ubicumque est agens sufficiens et materia, ibi potest esse passum et generatum; sed in spermate solo est agens sufficiens et materia; ergo sine menstruo potest fieri concepcio. Maior patet secundo *Phisicorum*: 'causa et effectus simul sunt et non sunt'. Minor patet, quia, ut patet secundo D*e generacione animalium*, in spermate sunt calor solis et animalis, et similiter virtus sensitiva et nutritiva; modo ista sunt sufficiens agens ad generacionem. Similiter sperma est causa materialis, ut videtur. [5] Tercio: ut patet primo et secundo *Phisicorum*, materia et forma non separantur secundum esse sed tantum secundum racionem; modo sicut dictum est prius, in spermate est materia sufficiens et forma ad generacionem; ergo sine emissione menstrui potest fieri concepcio.

[6] Quarto: si sic, sequeretur quod ex duobus in actu fieret tercium, quod est falsum. Tenet consequencia, quia utrumque, scilicet masculus et femella, est ens
E 171v in | actu, cum quodlibet sit compositum ex materia et forma.

[7] Oppositum patet per *autorem*, capitulo secundo, et per Aristotilem in decimo D*e historiis*, ubi dicit: 'siquidem enim mulier confert ad sperma et generacionem, palam quod oportet equaliter currere ab ambobus,' scilicet semen.

---

7 ibi] ubi E

---

3 Aristoteles, *De generatione animalium*, I.19, 727b6–9, 33; 728a2, 31–36, (AA, 9: 180) 9 Aristoteles, *Physica*, II.3, 195b16–18 (AA, 2: 72) 10 Aristoteles, *De generatione animalium*, II.3, 737a3–5 (AA, 9: 192) 13 Cf. Averroes, *In* Metaphysicam, VIII, comm. 3, f. 210vaH–I (AA, 1: 212) 20 Ps.-Albertus Magnus, *De secretis mulierum*, 228–230.9–13 21 Aristoteles, *Historia animalium*, X.5, 636b16–18

⟨Divisio quaestionis⟩

[8] In precedentibus questionibus visum est quod ad generacionem embrionis requiritur utriusque semen et qualiter sperma viri confert ad generacionem.

[9] Nunc videndum est primo si ad concepcionem oporteat utrumque semen emicti. Secundo videbitur de modo.

⟨Articulus primus⟩

[10] Quantum ad primum supponendum primo, ut dicitur secundo D*e generacione animalium*, capitulo septimo, quod solum unum semen non habet principium anime.

[11] Ex quo sequitur secunda supposicio quod ex ambobus, scilicet mare et femina, oportet esse animal, ut dicitur in decimo D*e historiis animalium*. Et ideo concluditur *ibidem* in fine unius capituli: 'quare manifestum quod ambobus fit emissio spermatis, si debeat esse,' scilicet generacio.

[12] Et ideo pro nunc est conclusio quod in concepcione necessario requiritur emissio seminis ex parte maris et femelle vel simultanie, id est in eodem tempore, vel successive.

[13] Probatur primo quia: nisi sic, sequeretur quod embrio non generaretur ex spermate viri et menstruo mulieris; quod est falsum, ut patuit prius. Probatur consequencia quia: quicumque ex ambobus non emicteret, nec in uno tempore nec in diversis, illius semen deficeret. [14] Secundo sequeretur quod masculus et femella non essent principium generacionis; quod est falsum, ut ⟨patet⟩ primo D*e generacione animalium*, capitulo primo. Tenet consequencia, quia, ut patuit *ibidem*, propter hoc masculus et femella sunt principium generacionis, quia sperma ab ambobus segregatur. [15] Tercio confirmatur auctoritate Aristotilis secundo D*e generacione animalium*, tractatu secundo, capitulo secundo: 'sine quidem igitur masculi emissione in coytu impossibile concipere et sine mulieris superfluitate.'

---

26 masculi] masculo E

---

8 Aristoteles, D*e generatione animalium*, II.3 737a29–30 (transl. Guillelmi, 55) **11** Aristoteles, *Historia animalium*, X.6, 637b38–638a5 **12** Aristoteles, *Historia animalium*, X.6, 637b32–33 **22** Aristoteles, D*e generatione animalium*, I.2, 716a4–5 (transl. Guillelmi, 5) | Aristoteles, D*e generatione animalium*, I.2, 716a4–14 (transl. Guillelmi, 5) **25** Aristoteles, D*e generatione animalium*, II.4, 739a27–28 (transl. Guillelmi, 59)

[16] Sed circa dicta dubitatur: utrum mulieres semper delectentur in emissione seminis. Ad hoc respondet Philosophus *ibidem*: dicit quod non. Et ideo dicit: 'non accidente tamen consueta fieri femellis, scilicet in coytu, delectacione circa collusionem talem concipiunt, si fuerit locus dispositus et descendentes matrices prope.' Et sequitur: 'sed ut in pluribus evenit illo modo,' scilicet quod concipiant facta delectacione in coytu. Et ideo dicit Philosophus statim post quod facta emissione seminum, si mulier delectetur in coytu, quod tunc melius accidit spermati quantum ad disposicionem fetus.

[17] Et hoc de primo.

⟨Articulus secundus⟩

[18] Quantum ad secundum, scilicet de modo emissionis et recepcionis, est sciendum quod dicunt aliqui quod aliquando, propter nimiam delectacionem vel libidinem in feminis, accidit ipsas prius emictere semen. Et hoc eciam concordat experigencie, quia aliquando, quando vir est in coytu cum muliere, antequam proprium semen emictat, sentit suum membrum aliqualiter esse humidum; et huius signum est quod mulier prius emisit quam ipse. Et ideo dicitur secundo D*e generacione animalium* in antiqua translacione quod forte accidit delectacio marium et femellarum equaliter, et forte non. Et postea emictitur sperma viri, quod est calidum et siccum. Et dicunt aliqui quod propter hoc actrahit semen femelle, et sic ex istis duobus fit unum, et actrahitur a matrice, quod dicitur embrio. Secundus modus emissionis est quod aliquando, propter nimiam activitatem spermatis viri emissi prius in vulvam, matrix supercalefit et actrahit sperma et postea clauditur, et ex tali clausione calidum in tantum agit quod mulier postea emictit semen, sicud sepe patet in sompniis. Et istud semen emissum matrix actrahit virtute spermatis. [19] Et istud videtur verisimile, quia, ut recitat Averrois in suo *Colliget*, semel accidebat virum balneari qui pre nimia libidine, semine deciso ab alveo, recessit, et quia virtus illius seminis fuit magna propter bonam digestionem, quedam virgo subintravit et actrahendo illud semen per os matricis, fuit impregnata.

27–28 digestionem] digestionis E

2 Aristoteles, D*e generatione animalium*, I.19, 727b 6–9, 33–728a 2, 31–36 (AA, 9: 180) 17 Aristoteles, D*e generatione animalium*, II.4, 739a29–30 (transl. Scoti, 82) 26 Averroes, *Colliget*, II.10, f. 22^{vb}

[20] Tunc in speciali secundum Aristotilem de modo emissionis et recepcionis seminum manifestatur in secundo D*e generacione animalium*, supponendo quod quelibet superfluitas movetur ad locum suum proprium, sicud sperma movetur ad testiculos et ad virgam. Et ideo dicitur in *libro predicto* in antiqua translacione: 'femina non impregnatur proprie nisi quando locus fuerit aptus ad motum et matrix descendit ad inferius et mas non eicit semen inter matrices, sicut opinantur quidam | homines.' Et causa redditur *ibidem* quoniam: orificium matricis est E172r strictum, sed eicit ipsum extra orificium, sicud eiciunt femine quendam cibum qui exit ab eis; unde remanet illic semen tempore; et cum mater fuerit temperata, actrahit illud semen ab interius, et non actrahit ex eo nisi modicum, et deicit illud, scilicet residuum, quasi multum malum. Et ideo dicitur *in eodem libro* in nova translacione: 'trahit autem genituram, id est semen, locus, scilicet matricis, propter caliditatem inexistentem matrici.' Et sequitur: 'et menstruorum segregacio est, scilicet a veneris, et congregacio ad matricem incendit caliditatem in particula hac.' Et ideo dicitur in decimo D*e historiis*: 'emictunt autem non in se ipsis matrices, sed extra, ubi et vir, deinde trahunt in se ipsas.' Et ideo patet quod non fit attractio spermatis a matrice a tota specie matricis, ut dixit quidam in libro suo D*e spermate*, sed per calidum, ut dictum est.

[21] Et hoc de secundo.

⟨Ad rationes⟩

[22] Ad raciones.

[23] Ad primam: conceditur quod mulier bene impregnatur sine delectacione in principio, et hoc contingit propter habundanciam materie. Tamen hoc non obstat quin emictat semen. Et ideo non valet: 'non causatur delectacio, ergo nec

7 orificium] olificium E 8 orificium] olificium E 14 veneris] (?) E 16 attractio] abstractio E

2 Aristoteles, D*e generatione animalium*, II.4, 739a36–739b21 (transl. Guillelmi, 60) 4 Aristoteles, D*e generatione animalium*, II.4, 739a28–31 (transl. Scoti, 82) 7 Aristoteles, D*e generatione animalium*, II.4, 739a33–739b4 (transl. Scoti, 82–83) 11 Aristoteles, D*e generatione animalium*, II.4, 739b9–11 (transl. Guillelmi, 60) 15 Aristoteles, *Historia animalium*, X.6, 637b34–35 17 Cf. Averroes, *Colliget*, II.10, f. 22vb: 'Et vicina quaedam mea, de cuius sacramento confidere multum bene poteramus, iuravit in anima sua quod impregnata fuerat subito in balneo lavelli aque calide in quo spermatizaverunt mali homines, cum essent balneati in illo balneo. Et ego perscrutatus fui unum librum, quem fecit Avemcladis D*e spermate* et inveni eum, qui dicit quod hoc possibile est esse et reddit de hoc rationem plurimum mihi placentem quia vulva trahit sperma propter unam propriam virtutem, quam habet cum eo a tota specie et ad hoc non est necesessaria delectatio'

emictitur semen,' quia in viris aliquando sic accidit in sompniis et aliquando in quadam passione, que dicitur goinorrea.

[24] Ad secundam: conceditur maior et negatur minor. Ad probacionem: dicitur quod ibi bene est agens sufficiens, ut visum fuit in alia questione. Sed ibi est defectus materie sufficientis, et ideo requiritur ibi menstruum.

[25] Ad terciam: dicitur quod non separantur secundum esse manente composito, scilicet secundum distinctionem localem; tamen se solo sperma non sufficeret propter dicta, ut videbitur post.

[26] Ad quartam: negatur consequencia. Ad probacionem ('quia vir et mulier etc.'): conceditur. Et ex hoc non sequitur quod sperma viri et menstruum mulieris sunt encia in actu taliter quod sint illud compositum ad quod transmutatur per transmutacionem ulteriorem.

[27] Et sic sit dictum etc.

⟨QUAESTIO SEXTA⟩

⟨*Utrum menstruum sit superfluum alimenti ultimi*⟩

[1] Utrum menstruum sit superfluum alimenti ultimi.

[2] Arguitur quod non.

[3] Primo: si sic, sequeretur quod esset digestum. Quod est falsum, quia menstrua sunt sperma indigestum, ut dicitur quarto *huius*. Tenet consequencia, quia talis digestio cuius dicitur superfluitas vadit continue subtiliando.

[4] Secundo: sequeretur quod eius emissio deberet debilitare mulieres. Quod est falsum, ymmo sunt saniores, ut dicitur in nono D*e historiis animalium*, capitulo primo. Tenet consequencia, quia multum coeuntes parum vivunt, ut dicitur in D*e longitudine et brevitate vite*, quia multum emictunt de superfluo.

[5] Tercio: tunc menstruum decinderetur ab omnibus membris, quod est falsum. Tenet consequencia, quia illud alimentum unde generatur menstruum destinatur ad omnes partes corporis et semper aliquid de illo remanet de superfluo.

[6] Oppositum patet secundo *huius*, tractatu secundo.

⟨Divisio quaestionis⟩

[7] In questione primo videndum est quid sit menstruum et unde causetur. Secundo propter quam causam fit in mulieribus. Tercio qualiter sit causa fetus. Quarto videbitur de tempore fluxus.

⟨Articulus primus⟩

[8] Quantum ad primum est prima supposicio quod quanto aliquid est debilioris virtutis digerentis, tanto in illo fit magis de superfluo et minus digesto.

---

12 semper] illud *add. necnon del.* E

---

4 Aristoteles, *De generatione animalium*, IV.5, 774a1 (transl. Scoti, 197); *De generatione animalium*, IV.5, 774a2 (transl. Guillelmi, 143) 7 Aristoteles, *Historia animalium*, VII.1, 581b30–582a1 9 Aristoteles, *De longitudine et brevitate vitae*, 5, 466b 10–11, 14–16 (AA, 7: 116) 13 Ps.-Albertus Magnus, *De secretis mulierum*, 234.32–34

[9] Secunda supposicio: quod illud superfluum indigestum est multitudo humiditatis sanguinee.

[10] Tercia supposicio: quod mulier communicat minori caliditati quam vir.

[11] Ex quo sequitur quarta supposicio quod segregacio humiditatis in mulieribus est superfluitas sanguinis.

[12] Ex quo sequitur conclusio quod menstruum est superfluum ultimi alimenti, scilicet sanguinis, quia, per primam supposicionem, ubi est minor virtus digerens, ibi est plus de superfluo indigesto; modo talis virtus est minor in mulieribus quam viris, per terciam, et, per secundam, illud est superfluum ultimi sanguinis qui est ultimum alimentum corporis et digestum ab ultima digestione; ergo sequitur quod menstruum est superfluitas ultimi alimenti, scilicet sanguinis. Et hoc declarat Philosophus in primo D*e generacione animalium* quia: nisi menstruum esset superfluum ultimi alimenti, sequeretur quod mulieres paterentur emorroys, quod est falsum, et hoc fluentibus menstruis. Tenet consequencia, quia illa superfluitas flueret per culum que modo transit per vulvam.

[13] Sed contra hoc arguitur quia: dicitur *loco preallegato* quod fluxus menstruorum est emorroys; ergo mulieres paciuntur illam infirmitatem. Responderet *ibidem* quod fluxus menstruorum est naturalis, sed emorroys vel fluxus sanguinis causatur propter infirmitatem. Secundo probatur *ibidem*: mulieres non paciuntur
E 172v fluxum narium, scilicet in sanguine fluentibus menstruis, quod non esset | nisi esset superfluitas sanguinis. Et propter hoc dixit Ypocrates in quinto *Amphorismarum*: 'mulieri sanguinem vomenti, si superveniat fluxus menstruorum, solvitur ille vomitus'. Similiter dicit *ibidem*: 'si mulieri menstrua sint retenta, bonum est ipsam habere fluxum sanguinis narium,' et causa est quia unus fluxus curat alium. Tercium signum adducit Philosophus quia propter hoc mulieres sunt leviores in cute et planiores quam viri, quia ab eis fluunt menstrua tamquam superflua. Quartum signum est quod propter hoc mulieres sunt minoris quantitatis viris, quia modicum convertitur in corpus, sed multum in illam superfluitatem.

1 est] et E 10 qui est ultimum] *iter.* E

12 Aristoteles, D*e generatione animalium*, I.19, 726b3–5 (transl. Guillelmi, 29); cf. 727a3–15 (transl. Guillelmi, 30) 17 Aristoteles, D*e generatione animalium*, I.20, 728a17–25 (transl. Guillelmi, 33) 19 Aristoteles, D*e generatione animalium*, I.20, 728a17–25 (transl. Guillelmi, 33) 20 Aristoteles, D*e generatione animalium*, I.19, 727a12–15 (transl. Guillelmi, 31) 23 Hippocrates, *Aphorismi*, V.32, 166–167 24 Hippocrates, *Aphorismi*, V.33, 166–167 26 Aristoteles, D*e generatione animalium*, I.19, 727a16 (transl. Guillelmi, 31)

[14] Secunda conclusio: quod menstruum est proporcionabile in femellis ad hoc ut sit principium generacionis, ut sperma in viris. Probatur quia: in eadem etate vel circa in qua viri emictunt sperma mulieres emictunt menstruum et accidunt eis accidencia similia circa mutacionem vocum et circa ubera et circa pilositates pudendorum ut viris; ergo menstrua in mulieribus sunt proporcionabile sicud sperma in viris. Tenet consequencia. Antecedens patet per experigenciam et in nono *De historiis animalium*. Et confirmatur quia: in eadem etate vel eo circa accidit effectus generacionis in viris et retencio menstruorum in mulieribus; ergo ista semina sunt proporcionabilia.

[15] Sed utrum mulier homo ⟨***⟩ ac sperma sicud vir videbitur post.

[16] Tunc de modo generacionis menstruorum, et principaliter illius quod mulier emictit in coytu, est sciendum primo quod tres sunt digestiones in homine, ut dicit Ysaac in libro *De urinis*. Prima fit in stomacho, que digestio est cibi et potus. Et purum assumit sibi stomachus in nutrimentum quantum sibi sufficit, et residuum mictitur ad venas miseraycas, sed impurum, scilicet feces, expellitur per intestina. Secunda digestio est in epate, quod actrahit sibi nutrimentum a venis miseraycis, et illud mictit suis venis et ibi digeritur, quo digesto de utili partem sibi convenientem actrahit et sanguinem generat et superfluum mandat expulsioni urine; et postea sanguis mundificatur a colera nigra, quam actrahit splen, et a colera rubea, quam actrahit sol, et a fleummate, quod actrahitur a pulmone ut inde infrigidetur, sed non nutriatur; et sanguis sic mundificatus mictitur ad cor et de illo capit quantum sibi sufficit et partem meliorem sanguinis et residuam partem transmictit ad vasa seminalia et ibi racione caliditatis testiculorum per ulteriorem digestionem et dealbacionem decoquitur et generatur semen, ex quo fit fetus. Et dicunt aliqui quod illa digestio in corde sit tercia. Alii dicunt, sicut medici, quod tercia digestio est que fit ex superfluo sanguinis illo modo qui statim dictus est. Et consimiliter diceretur de spermate, cum de illo quod mulier emictit in qualibet mense diceretur quod illud est magis indigestum quam quod emictit in coytu. Et ideo dicitur in quarto *huius* quod menstrua sunt sperma indigestum et causatur a maiori frigiditate.

[17] Et hoc de primo.

---

3 mulieres] mulieris (?) E 10 homo] *sequitur lacuna circa septem litterarum* E 13 fit] sit E 26 fit] *sequitur lacuna circa triginti litterarum* E

---

7 Aristoteles, *Historia animalium*, VII.2, 581a11–581b11 13 Isaac Israeli, *Liber urinarum*, f. 158^{v} 29 Aristoteles, *De generatione animalium*, IV.5, 774a1 (transl. Scoti, 197); Aristoteles, *De generatione animalium*, IV.5, 774a2 (transl. Guillelmi, 143)

⟨Articulus secundus⟩

[18] Quantum ad secundum de causis. De causa efficiente dictum est quod est caliditas, et hoc illius quod emictitur in coytu, tamen quod quolibet mense emictitur illius minor caliditas est causa. Causa materialis primaria est cibus et potus sumptus ex quibus causantur omnes alie superfluitates. Causa formalis est sicut in aliis mixtis. Causa finalis est generacio. Et ideo dicitur secundo De *generacione animalium* quod natura segregat menstrua ad matricem ⟨***⟩ finis et melioris et propter generacionem. Ultimo sciendum quod menstrua diversificantur in qualitate et in quantitate et in tempore et in emissione vel in retencione. Et de istis causis obmissis videbitur post.

⟨Ad rationes⟩

[19] Ad raciones.

[20] Ad primam: dicitur quod est aliqualiter digestum, non tamen tantum sicud sperma. Similiter est plus digestum quam illud quod emictitur quolibet mense.

[21] Ad secundam: conceditur consequencia. Ad probacionem consequentis auctoritate Philosophi: dicitur quod hoc intelligitur de emissione superfluitatis facta in quolibet mense, quia illa est magis indigesta et causans egritudines. Sed ex nimia emissione in coytu mulieres debilitarentur sicut viri, quia illa superfluitas est magis digesta et conveniens corpori. Non tamen tantum debilitantur sicut viri propter habundanciam illius materie.

[22] Ad terciam: negatur consequencia. Ad probacionem ('quia nutrimento etc.'): dicitur quod sufficit quod decindatur ab illo quod habet omnium membrorum virtutem sicut a corde.

[23] Et sic sit dictum etc.

3 quolibet] qualibet (?) E 5 superfluitates] medi *add. et sequitur lacuna circa quinque litterarum* E 7 matricem] *sequitur lacuna circa quattuor litterarum* E 8 et[2]] *sup. lin.* E 10 retencione] retentencione (?) E 24 virtutem] veritatem (?) E

7 Forsan Aristoteles, De *generatione animalium*, II.3, 737a19–34

⟨QUAESTIO SEPTIMA⟩

⟨*Utrum menstruum mulieris sit materia fetus*⟩

[1] Utrum menstruum mulieris sit materia fetus.

[2] Arguitur quod non.

[3] Primo: quod est male dispositum non est materia fetus; menstruum mulieris est huiusmodi; igitur etc. Maior patet, quia materia fetus debet esse bene disposita si ex ipsa debeat educi forma hominis, quia actus activorum sunt in paciente disposito, ut patet secundo D*e anima*. Minor declaratur quia: menstruum est sanguis crudus et indigestus; modo talis sanguis est male dispositus.

[4] Secundo: quod in quolibet mense decinditur a corpore mulieris non est materia fetus; menstruum mulieris est huiusmodi; igitur etc. Maior patet, quia oportet principium manere, ut dicitur primo *Phisicorum*. Minor patet in nono D*e historiis animalium*: 'mulieribus accidunt menstrua circa deficientes lunas.'

[5] Tercio: menstruum est infectivum fetus; ⟨ergo⟩ non est eius materia. Tenet consequencia, quia materia ipsius fetus debet esse conservativa ipsius. Antecedens patet per Albertum primo D*e generacione animalium*: menstruum mulieris est tantum infectum quod, si funderetur super gramina, viridia arescerent.

[6] Quarto: sperma non est materia fetus; igitur nec menstruum. Tenet consequencia per locum a maiori, quia magis videtur de spermate, cum sit melius dispositum. Antecedens patuit prius et similiter primo D*e generacione animalium* versus finem.

[7] Quinto: quod est nutrimentum fetus non est eius materia; menstruum mulieris est huiusmodi; igitur etc. Maior patet, quia nutrimentum non est materia ex qua res componitur. Minor patet in quarto D*e generacione animalium*: menstruum tempore impregnacionis non fluit in mulieribus, sed movetur sursum ad mammillas et ibi per ulteriorem digestionem mutatur in lac et ex illo nutritur fetus.

---

6 Aristoteles, D*e anima*, II.2, 414a11–12 (AA, 6: 55) **10** Aristoteles, *Physica*, I.6, 189a19–20 (AA, 1: 21) **11** Aristoteles, D*e generatione animalium*, IV.2, 767a1–5 (AA, 9: 230) **14** *Locus non inventus* **18** Aristoteles, D*e generatione animalium*, I.21, 729a29, b4–8 (AA, 9: 181) **22** Aristoteles, D*e generatione animalium*, IV, 8, 776b2–9, 777a4–13 (transl. Scoti, 206, 208); Aristoteles, D*e generatione animalium*, IV.8, 776b5–12, 777a4–20 (transl. Guillelmi, 149, 150–151)

[8] Sexto: compositum ex materia et forma non est materia fetus; menstruum mulieris est huiusmodi; igitur etc. Maior patet, quia compositum non est materia nec forma, ut patet secundo *Phisicorum*. Minor patet, quia componitur ex materia prima et forma menstrui, cum sit mixtum.

[9] Oppositum patet primo et secundo D*e generacione animalium*.

⟨Divisio quaestionis⟩

[10] Prius visum est qualiter sperma confert ad generacionem, nunc videndum est hoc de menstruo. Secundo videtur de diversitate menstruorum.

⟨Articulus primus⟩

[11] Quantum ad primum sciendum supponendo primo, ut dicitur secundo D*e generacione animalium*, tractatu secundo, capitulo septimo, quod secundum naturam mulier confert ad generacionem, et hoc est in emissione menstruorum.

[12] Secundum sciendum quod menstruum est duplex: quoddam est bene dispositum et digestum, et est illa materia quam emictit mulier quando est in coytu; aliud est magis indigestum et indispositum, et est illud quod in mense fluit de mulieribus, et ideo dicitur menstruum proprie a mense.

[13] Et tunc est prima conclusio quod menstruum bene dispositum est materia fetus. Probatur: illud quod emictitur a muliere in omni concepcione embrionis tempore coytus est materia fetus; sed menstruum mulieris bene dispositum est huiusmodi; igitur etc. Maior patet. Minor declaratur quia: solum menstruum bene dispositum causat delectacionem in coytu et solum istud menstruum emictitur a muliere in concepcione embrionis.

[14] Secunda conclusio: quod menstruum male dispositum et secundo modo dictum non est materia fetus. [15] Probatur: si sic, sequeretur quod tale menstruum aliquando emicteretur in concepcione embrionis. Consequens est falsum. Et ideo dicitur nono D*e historiis*: 'natura quidem enim concepciones fiunt post remocionem menstruorum in mulieribus.' Similiter tale menstruum non causat delectacionem

3 Cf. Johannes Buridanus, *Quaestiones Physicorum*, I.9, 93.8–15 5 Aristoteles, D*e generatione animalium*, I.19, 727b32 (transl. Guillelmi 32); Aristoteles, D*e generatione animalium*, II.4, 738b18–26 (transl. Guillelmi, 58) 11 Aristoteles, D*e generatione animalium*, I.19, 727b31–33 (transl. Guillelmi, 32) 26 Aristoteles, *Historia animalium*, VII.2, 582b12–13 (AA, 9: 99)

in coytu nec est dispositum ad recipiendum formam hominis, sed magis causat dolorem quando emictitur in corpore tempore fluxus. Et ideo dicitur *loco preallegato* quod suffocaciones et impulsus fiant in matricibus donec fluunt menstrua. Tenet prima consequencia, quia, cum embrio componeretur ex menstruo male disposito, oportet quod emicteretur. [**16**] Sed contra hoc arguitur quia: in tempore fluxus menstruorum concipitur fetus morbidus et cito moriturus, quod non esset nisi menstruum male dispositum esset materia fetus. [**17**] Dicendum quod ista non est causa; sed causa est quia tempore fluxus menstruorum vulva mulieris est infecta et propter hoc semina ad ipsam proiecta inficiuntur, ex quibus generatur fetus racione menstrui emissi male dispositi.

⟨Articulus secundus⟩

[**18**] Quantum ad secundum | ⟨dicendum⟩ quod menstrua diversificantur in quantitate et qualitate et tempore. E 173^{v}

[**19**] In quantitate, quia vel est multa vel pauca vel mediocris. Multa quantitas contingit ex quatuor. Primo ex amplitudine pororum vel dyarum per quas emictitur menstruum. Secundo ex multitudine humorum. Tercio ex acumine eorum. Quarto ex liquiditate eorum. Pauca quantitatis contingit primo ex opilacione pilorum. Secundo ex paucitate humorum. Tercio ex frigiditate eorum. Quarto ex eorum spissitudine. Quantitas mediocris contingit ex predictis causis extremis medio modo se habentibus.

[**20**] Qualitas menstruorum est duplex in colore et raritate et densitate. Color aliquando est rubeus ad modum sanguinis, et principaliter in illis mulieribus in quibus non sunt corrupti humores, aliquando est lividus vel plumbeus, sicud in quibus sunt humores putrefacti, et principaliter in vetulis. Et secundum alios colores diversificantur proporcionaliter secundum humores et qualitates primas menstruis vel corpori dominantes. Ut in pluribus tamen sunt ad colorem sanguinis. Et ista intelliguntur de menstruo emisso in mense. Sed color emissi in coytu est in pluribus ad modum lactis. In raritate et densitate differunt secundum maiorem vel minorem digestionem.

[**21**] De tempore, scilicet in quo fluant et qualiter et quociens, videtur post.

---

10 emissi] materie (?) *add. necnon del.* E **15** dyarum] *sequitur lacuna circa quattuor litterarum* E **19** mediocris] (?) E **21** et[1]] *iter.* E **24** in[2]] *iter.* E **26** dominantes] dominantis (?) E

---

2 Aristoteles, *Historia animalium*, VII.2, 582b9–12

⟨Ad rationes⟩

[22] Ad raciones.

[23] Ad primam: conceditur maior. Et similiter minor, quia conclusio est pro secunda conclusione, quia tale menstruum, cum sit indispositum, non est materia fetus. Aliter dicitur negando minorem de menstruo emisso in coytu.

[24] Ad secundam: respondetur sicut prius. Vel dicitur negando minorem de menstruo quod emictitur in coytu.

[25] Ad terciam: conceditur consequencia et antecedens de menstruo emisso quolibet mense (non est materia fetus), sed non de alio etc.

[26] Ad quartam: negatur consequencia. Ad probacionem per locum a maiori: dicitur quod sperma non ingreditur sicud forma et efficiens, ut visum est; eciam non omne bene dispositum est materia fetus.

[27] Ad quintam: posset negari maior, quia ex eisdem sumus et nutrimus, ut patet secundo D*e anima*. Aliter dicitur ad minorem, concedendo maiorem quod menstruum male dispositum et emissum in mense est nutrimentum fetus, sed hoc non est verum de menstruo quod emictitur in coytu.

[28] Ad sextam: conceditur maior quod secundum totum non est materia fetus, sed secundum eius materiam. Modo sic est in proposito de menstruo quod antequam forma hominis educatur de potencia seminum, forma menstrui corrumpitur, sed materia manet, quia in materia in qua prius fuit forma menstrui introducitur forma hominis mediantibus aliis disposicionibus.

[29] Et sic sit dictum etc.

8 de menstruo] *iter.* E

14 Aristoteles, D*e generatione et corruptione*, II.8, 335a10–11 (AA, 4: 36)

⟨QUAESTIO OCTAVA⟩

⟨*Utrum mulieres patiantur fluxum menstruorum in defectu lunae*⟩

[1] Utrum mulieres paciantur fluxum menstruorum in defectu lune.

[2] Arguitur quod non.

[3] Primo: in illo tempore non paciuntur fluxum in quo virtus lune est diminuta; sed hoc est in defectu lune; igitur etc. Maior patet, quia quando virtus lune est diminuta, tunc humores sunt diminuti, et per consequens menstruum mulieris deficit et non oportet quod fluat de mulieribus. Minor patet, quia quanto luna plus deficit in lumine, tanto plus diminuitur influencia et virtus lune super ista inferiora.

[4] Secundo: in novilunio mulieres paciuntur menstruum; ergo non in defectu lune. Tenet consequencia, quia sunt distincta tempora. Antecedens patet, quia in novilunio augmentatur influencia lune super ista inferiora, et per consequens augmentantur humores menstruosi, et tunc incipient fluere de corporibus mulierum.

[5] Tercio: in defectu lune vene corporis in mulieribus constringuntur; ergo in illo tempore non paciuntur illum fluxum. Tenet consequencia, quia ad fluxum menstruorum requiritur ampliacio venarum, quia vene corporis sunt meatus per quos transit menstruum. Antecedens patet, quia in defectu lune ipsa influit frigiditatem, que est causa constrictionis, ut patet quarto *Meteororum*.

[6] Quarto: in illo tempore mulieres paciuntur menstruum in quo vene corporis magis ampliantur; sed hoc | est in secunda quarta lune. Maior patet, quia ad E 174r
fluxum menstruorum requiritur ampliacio venarum, ut ipsum facilius transeat. Minor patet, quia secunda quarta lune est calida et sicca; modo caliditas est causa dilatacionis et ampliacionis, ut patet quarto *Meteororum*.

[7] Quinto: si sic, sequeretur quod viri eciam paterentur fluxum spermatis in defectu lune, quod est falsum per experienciam. Tenet consequencia, quia eadem

---

20 quarta] quarte E 22 quarta] quarte E

18 *Locus non inventus* 23 *Locus non inventus*

racione qua in mulieribus flueret menstruum in illo tempore viri paterentur fluxum spermatis, quia sperma est superfluum alimenti in viris sicut menstruum in mulieribus.

[8] Sexto: in plenilunio humores maxime augentur; ergo in illo paciuntur fluxum et non in alio. Tenet consequencia, quia multitudo humorum in corpore facit ad maiorem fluxum. Antecedens patet, quia in plenilunio influencia lune est potissima.

[9] Oppositum patet in nono D*e historiis* et in secundo D*e generacione animalium*.

⟨Divisio quaestionis⟩

[10] In questione primo videndum de tempore fluxus menstruorum et modo. Secundo de duracione. Tercio in quibus mulieribus accidit maior fluxus. Quarto si ita fiat in aliis animalibus. Et quinto de causis fluxus. Et in sequenti questione de retencione menstruorum.

⟨Articulus primus⟩

[11] Quantum ad primum sciendum quod, quantum ad quia est, non est dubium quin mulieres paciantur fluxum menstruorum. Et ideo dicitur primo D*e generacione animalium*, capitulo penultimo, et in nono D*e historiis* quod menstrua fiant plurimis mulieribus iam uberibus ad duos digitos elevatis. Et ideo dicitur *ibidem* quod maxime indigent custodia circa hoc tempus. Et reddit causam quia: maxime incitantur ad veneriorum usum quando eis incipiunt menstrua. Et iste fluxus fit in mulieribus necessitate materie propter non digere cibum sumptum, ut dicitur in secundo D*e generacione animalium*.

18 elevatis] *corr. ex.* eleveatis E

8 Aristoteles, *Historia animalium*, VII.2, 582a35 | Aristoteles, D*e generatione animalium*, IV.2, 767a1–5 (AA, 9: 230) **17** Aristoteles, D*e generatione animalium*, I.20, 728b24–27 (transl. Scoti, 48); Aristoteles, D*e generatione animalium*, I.20, 728b30–32 (transl. Guillelmi, 34–35) | Aristoteles, *Historia animalium*, VII.1, 581b4–5 **18** Aristoteles, *Historia animalium*, VII.1, 581b12–18 **22** Aristoteles, D*e generatione animalium*, I.20, 728a14–23 (transl. Scoti, 46); Aristoteles, D*e generatione animalium*, I.20, 728a17–22 (transl. Guillelmi, 33); Aristoteles, D*e generatione animalium*, II.4, 738a11–16 (transl. Scoti, 78)

[12] Sed de tempore fluxus menstruorum est dubium. Et ideo sciendum primo, ut dicitur *in libro iam dicto* quod nullum est tempus certum statutum omnibus mulieribus quantum ad illum fluxum. Tamen est sciendum quod in mulieribus sunt quatuor complexiones: quedam sunt sanguinee, quedam colerice, quedam melancolice et alia fleumatice. Secundo sciendum quod quatuor sunt quarte vel quadre ipsius lune differentes in complexionibus: prima est calida et humida, secunda calida et sicca, tercia frigida et sicca, quarta frigida et humida. Licet tamen universaliter luna habeat influere istis inferioribus frigiditatem et humiditatem, tamen hoc temperatur in aliquibus istarum quartarum.

[13] Tunc est prima conclusio quod mulieres complexionis sanguinee paciuntur fluxum in prima quarta lune. Probatur: in illo tempore mulieres sanguinee paciuntur fluxum menstruorum in quo menstruum in eis maxime augetur; sed hoc est in prima quarta lune; igitur etc. Maior patet, quia quando materia menstrui est in magna habundancia, tunc incipit fluere. Minor patet, quia in illis mulieribus menstruum est quodammodo complexionis sanguinee, et ideo propter convenienciam complexionis illius quarte lune talis humor magis augetur.

[14] Sed contra talem conclusionem arguitur quia: si sic, sequeretur quod in tempore calido et humido humor fleumaticus augeretur; quod est falsum, quia magis consumitur et digeritur racione caliditatis, et per consequens non fluit de mulieribus. Tenet consequencia, quia menstruum est humor fleumaticus. Dicendum negando consequenciam. Ad probacionem: dicitur quod in talibus mulieribus menstruum est magis digestum et minus frigidum, aliter bene esset verum.

[15] Secunda conclusio: quod mulieres colerice in secunda quarta lune paciuntur fluxum menstruorum. Probatur quia: talibus mulieribus menstruum maxime augetur in illo tempore; ergo tunc pacientur fluxum. Tenet consequencia ut prius. Antecedens patet, quia quilibet humor maxime augetur in tempore sibi consimili.

[16] Sed contra hoc arguitur: non est dare mulieres colerice complexionis; ergo nulle tales mulieres paciuntur fluxum in secunda quarta. Tenet consequencia. Antecedens patet, quia, ut dicit Avicenna, calidissima mulier est frigidior frigidissimo viro; et quia frigidissimus vir non est colerice complexionis, ut notum est, ergo multo minus calidissima mulier, que adhuc est | isto viro frigidior. Dicendum E 174v
quod aliquam mulierem esse colerice complexionis intelligitur dupliciter: uno

21 dicendum] dicendo E 32 dicendum] dicendo E

2 Forsan Aristoteles, *De generatione animalium*, II.4, 738a22–25 (transl. Scoti, 79); Aristoteles, *De generatione animalium*, II.4, 738a24–27 (transl. Guillelmi, 57)

modo in comparacione ad viros, alio modo in comparacione ad se ipsas. Primo modo nulla mulier est colerice complexionis, et hoc probat racio. Sed alique mulieres dicuntur magis calide aliis comparando ipsas ad invicem.

[17] Tercia conclusio: quod mulieres melancolice complexionis paciuntur menstruum in tercia quarta lune. Probatur: in tercia quarta maxime augetur humor in talibus mulieribus; igitur in illa quarta paciuntur. Tenet consequencia. Antecedens patet, quia dum luna habet influenciam frigidam et siccam, ergo tunc augmentat omnem humorem melancolicum.

[18] Sed contra hoc arguitur: in illo tempore mulieres non paciuntur menstruum quod est maxime siccum; sed hoc tempus tercie quarte ⟨est maxime siccum⟩; igitur etc. Maior patet, quia ex quo menstruum est humor, non augetur in tempore sicco, et per consequens non fluit de mulieribus in illo tempore. Minor patet, quia illud tempus est melancolicum, et per consequens siccum. Respondetur concedendo, si tempus simpliciter esset siccum; si autem secundum quid, non oportet. Modo sic est in proposito, quia tercia quarta lune non dicitur esse melancolica simpliciter, sed solum in comparacione ad alias quartas.

[19] Quarta conclusio: quod mulieres fleumatice complexionis paciuntur fluxum menstruorum in quarta quadra lune. Probatur: in quocumque tempore augetur humor fleumaticus in mulieribus in illo paciuntur fluxum menstruorum; sed hoc est in ultima quarta lune. Maior patet, quia menstruum in mulieribus fleumaticis est humor fleumaticus. Minor patet, quia ultima quarta lune est fleumatica.

[20] Sed dubitatur in quo tempore anni mulieres magis paciuntur menstruum, et similiter in qua quarta. Dicendum quod sanguinee magis paciuntur in vere, colerice in estate, melancolice in autompne, fleumatice in hyeme. Tamen ut in pluribus, ut dicitur secundo *De generacione animalium*, hoc accidit magis in defectu lune, scilicet circa novilunium, et in hyeme propter maiorem frigiditatem temporis, et eciam quia mulieres ut in pluribus sunt fleumatice. Et ideo dicitur in nono *De historiis* quod motus, scilicet menstruorum, mulieris fit circa deficientes lunas. Propter quod ayunt quidam sophysancium lunam esse femellam, quia simul hiis accidit purificacio huic, scilicet lune, diminucio, scilicet in lumine, et post purificacionem et diminucionem replecio amborum.

---

26 Aristoteles, *De generatione animalium*, IV.2, 767a3–8 (transl. Scoti, 174); Aristoteles, *De generatione animalium*, IV.2, 767a2–13 (transl. Guillelmi, 126) **29** Aristoteles, *Historia animalium*, VII.2, 582a35

[21] De modo dicitur Philosophus in secundo De *generacione animalium* quod due vene procedunt a corde et terminantur ad matricem; quibus repletis ex superfluo sanguinis qui propter frigiditatem in mulieribus non potest digeri, fluit per illas venas circa matricem et ibi expellitur successive et paulatim, quia vene non possunt illud superfluum totum simul suscipere nec emictere propter earum subtilitatem; et ideo fit fluxus menstruorum sicut fluxus sanguinis per anum.

[22] Patet ergo de modo fluxus menstruorum, et quod alique mulieres illum paciuntur in uno tempore lunacionis et alie in alio ut in pluribus, cum fit in decrescencia lune circa novilunium.

[23] Item ⟨***⟩.

⟨Articulus quartus – finis⟩

[24] aliis in pennas sicut in avibus. Similiter aliqua animalificancia sine ovis carent menstruis, ut dicitur *ibidem*, quia aliquibus illa superfluitas mutatur in corpus, aliis in urinam, et talia multum mingunt; sed mulieribus totum mictitur in menstruum, sicut viris in sperma. Et ideo dicitur *libro preallegato*: 'plurimum enim secundum magnitudinem emictit sperma animalium homo'. Et ideo dicitur primo De *generacione animalium* quod plurima purificacio inter alia animalia fit mulieribus et masculis plura spermatis emissio secundum racionem magnitudinis. E 175r

⟨Articulus quintus⟩

[25] Quantum ad quintum de causis. Causa efficiens fluxus est magna frigiditas, et ideo fit maior fluxus in hyeme, ut dicitur in primo De *generacione animalium*. Causa materialis est humiditas habundans. Causa formalis, scilicet modus, dicta est. Causa finalis est propter purgacionem nature. Et ideo dicitur in nono De *historiis*: 'quicumque quidem enim pueri aut quecumque virgines superfluitatibus corpora habebant congregatis talibus, hiis quidem in spermate, hiis autem in menstruis,

10 item] (?) E

1 Aristoteles, De *generatione animalium*, II.4, 738a9–18 (transl. Scoti, 78–79); Aristoteles, De *generatione animalium*, II.4, 738a10–23 (transl. Guillelmi, 57) 13 *Locus non inventus* 15 Aristoteles, *Historia animalium*, VII.2, 582b29–583a14 17 Aristoteles, De *generatione animalium*, I.20, 728b15–16 (transl. Guillelmi, 34) 22 Aristoteles, De *generatione animalium*, IV.2, 767a3–8 (transl. Scoti, 174); Aristoteles, De *generatione animalium*, IV.2, 767a2–13 (transl. Guillelmi, 126) 24 Aristoteles, *Historia animalium*, VII.1, 581b30–582a6

saniora corpora plena fiunt et melioris nutriture exeuntibus impedientibus sanitatem et simul alimentum, quibuscumque autem contrarium tenuiora et languoriosa corpora fiunt et sequitur a natura et bene habentibus segregacio fit, hiis quidem in spermate, hiis autem in menstruis.' Et ideo dicitur in secundo *De generacione animalium* quod egressio spermatis et menstrui mensurate in qualitate et quantitate corpora salvant. Et ideo dicitur quinto *Amfrismorum*: 'menstruis plurimis venientibus accidunt egritudines, sed non venientibus accidunt matrici egritudines.'

[26] Tunc de signis mulieris pacientis menstruum.

[27] Primum est quod urina mulieris est sanguine permixta. Racio est quia urina in exitu currit per eandem viam per quam fluit menstruum, et inveniens ibi aliquid de menstruo quod est coloris sanguinis rapit ipsum secum et permiscetur cum ipsa urina et coloratur.

[28] Secundum est quod oculi mulieris sunt aquei et in angulis oculorum sunt quedam gutte aquee. Causa est quia tunc mulier est plena humoribus frigidis et multum indigestis quos natura nititur expellere per totum corpus; et quia partes circa oculos sunt magis porose quam alie partes corporis, ideo magis ibi apparent quam alibi.

[29] Tercium est mutacio colorum in facie, et precipue in pallorem, propter illos humores frigidos et indigestos.

[30] Quartum est abhominacio cibi, quia tunc calor naturalis debilitatur et similiter laborat ad expellendum menstrua propter purgacionem nature quam generant.

[31] Et ista sunt signa naturalia.

[32] Quintum signum est complexio mulieris, sicud si esset sanguinea, pateretur fluxum in prima quarta lune etc., ut dictum est.

[33] Sextum: quia tunc portat semper manus sub tunica intrusas in foraminibus tunice. Et causa est quia, cum continue fluat, oportet ut continue se tergant.

[34] Septimum est quod tunc super ponit multa pepla usque ad oculos vel capucium bene calidum. Et causa est duplex. Primo quia tunc mulieres continue dolent in capite racione frigiditatis, et ideo ipsum cooperiunt ut calefiat. Secunda causa est quia tunc timent ab aliis inspici, et tunc racione signorum predictorum in facie congnoscetur quod paterentur fluxum.

---

1 saniora] seniora (?) E | corpora] fiunt *add. necnon del.* E 17 quam] quod E

---

5 Aristoteles, *De generatione animalium*, II.4, 738a28–29 (transl. Guillelmi, 57) 6 Hippocrates, *Aphorismi*, V.57, 172–173

[35] Octavum quod mulier est tarda et non delectatur iocari nec delectari. Causa est quia tunc est multum frigida et debilis.

[36] Tunc dubitatur utrum bonum esset coire cum muliere menstruosa. Dicendum quod non. Et causa est: propter humores illos corruptos vir inficeretur, quo infecto incurreret egritudinem. Et ideo dicitur in *Secretis* quod mulieres sapientes se custodiunt et invite coeunt cum viris, et quod tunc [quod] non debeat actus exerceri cum eis. Patet per Albertum in tractatu D*e menstruis*: 'in quibus fluunt menstrua vel sunt retenta, si diligenter conspiciunt, pueros ipsos intoxicant; et causa est quia sunt infecte venenosis humoribus et corruptis qui elevati sursum ad caput exeunt per oculos, quia sunt magis porosi et inficiunt aerem, et iste alium, et sic consequenter usque ad puerum; et illud maxime est verum in mulieribus antiquis utentibus grosso cibo ex quo generantur grossi humores.' Et ideo dicitur in *Sompno et vigilia* quod mulier menstruosa inspiciens speculum ipsum inficit generando in eum maculas rubeas; et hoc magis contingit si illud speculum sit novum et bene mundum, quia tunc forcius imprimitur et de difficili tales macule abstergentur. Et illud est nonum signum per quod congnoscitur si mulier sit menstruosa.

[37] Secundo dubitatur quare non inficiunt se ipsas. Dicitur quod hoc facit consuetudo et disposicio naturalis, quia iste mulieres sunt consuete habere menstruum et ideo eis non nocet. Et propter hoc dicit Commentator tercio *Phisicorum* in principio quod quidam homines fuerunt consueti comedere venenum et venenum fuit eis cibus. Similiter ad hoc operatur disposicio naturalis corporum mulierum, | E 175^{v} quia natura semper facit de possibilibus quod melius est, ut dicitur in primo D*e partibus animalium*, et quia videtur quod non potuit corpora mulierum preservare ab infirmitate, ordinavit earum corpora taliter ut non inficerentur. Et quod istud sit verum patet in aliis animalibus venenosis sicud est bufo, scorpio et aranea, quia venenum istorum inficit alia animalia, non tamen inficit corpora eorum.

⟨Ad rationes⟩

[38] Ad raciones.

[39] Ad primam: conceditur maior et negatur minor. Ad probacionem ('quia quanto luna etc.'): negatur, quia bene diminuitur ab influencia sanguinea vel colerica, non tamen tunc a fleumatica vel melancolica. Aliter posset dici quod

---

5 Ps.-Albertus Magnus, *De secretis mulierum*, 448.27–29 7 Cf. Ps.-Albertus Magnus, *De secretis mulierum*, 450.33–34 (451, n. 425) 13 Aristoteles, *De insomniis*, 2, 459b 27–32 (AA, 7: 86) 19 Averroes, *In* Physicam I, comm. 60, 36raD–E (AA, 2: 113) 23 Aristoteles, *De partibus animalium*, III.4, 665b 14–15 (AA, 9: 130)

nunquam deficit influencia, quia semper una eius medietas est illuminata, quamvis apparet deficere apud nos.

[40] Ad secundam: negatur consequencia, quia alique paciuntur in ista quarta et alie in alia.

[41] Ad terciam: negatur consequencia, quia talis frigiditas non sufficit tantum constringere quod fiat retencio. Ad probacionem consequencie: dicitur quod ibi est ampliacio venarum sufficiens ad emissionem.

[42] Ad quartam: conceditur maior, si sint colerice; si vero alterius complexionis, non oportet, ut dictum est.

[43] Ad quintam: negatur consequencia. Ad probacionem: dicitur quod est dissimile, quia menstruum est frigidum et humidum, sperma vero calidum et humidum. Eciam non est tanta copia in viris de spermate sicud in mulieribus de menstruo propter impotenciam digestionis. Similiter viri sunt magis calidi et racione caliditatis possunt consumere et desiccare sperma. Et ideo mulieres ante duodecim annum vel quatuordecim non paciuntur fluxum menstruorum, mulieres vero que pervenerunt ad debitam etatem paciuntur et sunt magis frigide.

[44] Ad sextam: conceditur consequencia de mulieribus colericis, quia in plenilunio augmentantur humores colerici, ut dictum est etc. etc. etc.

[45] Expliciunt questiones bone a reverendo magistro Buridano Parisiis pertractate, ab Amplonio Rensie super *Secreta mulierum* notate difficul⟨ter⟩, ⟨quoniam?⟩ exemplar studencium erat incorrectum.

Expliciunt ⟨questiones⟩ super *Secreta Mulierum*

---

14 possunt] desumi (?) *add. necnon del.* E **16** vero] non *add. necnon del.* E **18** etc.[3]] pro quo in deo non sit misericordia quia misericordia est passio appetitus sensitivi ut patet secundo ethicorum et secundo rethorice in deo autem non est appetitus sensitivus quare etc. dicendum secundum commentatorem duodecimo metaphisice quod ea que sunt in deo et in istis inferioribus non sunt dicta univoce sed equivoce vel anologice ut patet de sciencia dei quia sua sciencia est causa rerum naturalium et nostra est causata a rebus naturalibus et similiter misericordia in ipso et in nobis dicitur equivoce unde in ipso non est passio appetitus sensitivi sicud in nobis nec est aliquid reale additum sue essencie sicud in nobis sed differt tantum a sua essencia secundum racionem *add.* E **19** A] parisiis] par E

APPENDIX B

The *Quaestiones de animalibus* in ms. Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 2164

It seems that John Buridan did not comment on the *corpus* of Aristotle's D*e animalibus*. There is a manuscript containing questions on the D*e animalibus* ascribed to Buridan: ms. Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 2164, ff. 235^{r}–311^{v}. However, this attribution is commonly rejected.

The work in ms. Vat. Lat. 2164 contains questions on the three so-called 'zoological' Aristotelian treatises *Historia animalium*, D*e partibus animalium*, and D*e generatione animalium*; nevertheless, it does not contain a commentary on the books III–V of the D*e generatione animalium* (books XVII–XIX of the D*e animalibus*). As T.W. Köler has remarked, the main structure of the question commentary is often interlaced with *expositiones*.[1] A hand later than that of the codex ascribed this commentary to John Buridan. A. Maier rejected this ascription, first in 1957 and then in 1961, largely on doctrinal grounds; rather, she suggested it be attributed to an 'early fourteenth-century Master of Arts' inclined towards 'Averroistic' positions.[2] Subsequent authors, most notably B. Michael in 1985, L. Cova in 1992 and T.W. Köhler in 2008, repeat Maier's claim of an Averroistic bent to these questions.[3] Catalogues of Buridan's works reprise this claim of false attribution, and it is commonly accepted in the studies devoted to the late medieval commentary tradition on the D*e animalibus*.[4] Therefore, the questions in ms Vat. Lat

1 See T.W. Köhler, Homo animal nobilissimum: *Konturen des spezifisch Menschlichen in der naturphilosophischen Aristoteleskommentierung des dreizehnten Jahrhunderts*, 1, Brill, Leiden 2008, 26–27, footnote 67.

2 See A. Maier, *Codices Vaticani Latini. Codices 2118–2192*, Bibliotheca Vaticana, Città del Vaticano 1961, 122–129 and Ead., *An der Grenze von Scholastik und Naturwissenschaft: die Struktur der materiellen Substanz, das Problem der Gravitation, die Mathematik Formlatituden*, 2 vols, Storia e Letteratura, Roma 1952, 128, footnote 85.

3 see B. Michael, op. cit., 923–924, L. Cova, 'Le questioni di Giovanni Vath sul D*e generatione animalium*', *Archives d'histoire doctrinale et littéraire du moyen âge*, 59 (1992), 175–287, footnote 80, 194–195, and T.W. Köhler, op. cit., 26–27, footnote 67.

4 For the catalogues of Buridan's works see especially C.H. Lohr, 'Medieval Latin Commentaries. Authors: Jacobus-Johannes Juff', *Traditio*, 26 (1970), 161–183, 181–183; B. Michael, op. cit., 923–924, O. Weijers, *Le travail intellectuel à la faculté des arts de Paris. Textes et maîtres (ca. 1200–1250)*, cit., 163. For the studies on late medieval commentaries on the D*e animalibus*, see below, *infra*, footnote 5.

2164 are commonly known as an anonymous commentary on the *De animalibus*.

Recent scholarship has paid more and more attention to commentaries on the *De animalibus*, revealing several aspects of medieval authors' approach to biology, both human and animal, and providing a clearer idea of medieval natural philosophy *per se* and in its relationship to medicine. In fact, in these commentaries, as several studies on, among others, Peter of Spain and Albert the Great's *De animalibus* testify, natural philosophical and medical traditions are constantly and explicitly discussed and compared to solve questions on living beings. This is especially evident for those issues where Aristotelian and medical authorities did not reach the same solution, a class of problems belonging to the so-called 'controversy between philosophers and physicians'. It has been highlighted that there are considerably fewer commentaries on the *De animalibus* than there are on other parts of Aristotelian and natural philosophy, particularly for the Fourteenth and the Fifteenth century. Only later, in the Renaissance, and probably due to the new Latin translation of the *De animalibus* by Theodor of Gaza, does the interest in these texts increase. The text contained in the Vatican manuscript is one of the few manifestations of this tradition in the Fourteenth century. It makes several references to the main sources and authors involved in the aforementioned debates between natural philosophical and medical canons: Aristotle, Galen, Avicenna, Averroes, Albert the Great, and some otherwise unspecified Arabic medical doctors are quoted. Moreover, the text addresses some of the most typical questions of the 'controversy between philosophers and physicians': the corporeal localization of sensation (book I, q. 8, f. 243^{rb}), the anatomical origin of veins (book III, q. 2, f. 251^{rb}) and nerves (book III, q. 3, f. 252^{vb}), and the male and female roles in reproduction (especially book XV, qq. 7–9, f. 309$^{va–b}$).[5] Further research could

5 On the reception of the *De animalibus* in the Middle Ages, see especially S. Perfetti, *Animali pensati nella filosofia tra Medioevo e prima età moderna*, ETS, Pisa 2012; Id., 'I libri *De animalibus* di Aristotele e i saperi sugli animali nel XIII secolo', in: C. Crisciani, R. Lambertini, and R. Martorelli Vico (eds), Parva naturalia. *Saperi medievali, natura e vita*, Istituti Editoriali e Poligrafici Internazionali, Pisa-Roma 2004, 143–170; Id., 'How and When the Medieval Commentary Died out: the Case of Aristotle's Zoological Writings', in: G. Fioravanti, C. Leonardi and S. Perfetti (eds), *Il commento filosofico nell'occidente latino (secoli 13.–15.): atti del colloquio Firenze-Pisa, 19–22 ottobre 2000, organizzato dalla* SISMEL *(Società Internazionale per lo Studio del Medioevo Latino) e dalla* SISPM *(Società Italiana per lo Studio del Pensiero Medievale), sotto l'egida della* SIEPM, Brepols, Turnhout 2002, 429–444; L. Cova, 'Il *corpus* zoologico di Aristotele nei dibattiti fra gli 'artisti' parigini alle soglie del XIV secolo', in: O. Weijers and L. Holtz (eds), *L'enseignement des disciplines à la Faculté des arts (Paris et Oxford, XIIIe–XVe siècles). Actes du Colloque international*, Brepols, Turnhout 1997, 281–302; Id., 'Le questioni di Giovanni Vath sul *De generatione animalium*', *Archives d'histoire doctrinale et littéraire du moyen âge*, 59 (1992), 175–287. On medicine and philosophy in Peter of Spain and Albert the Great's *De animalibus*, see especially M. de

shed some light on the authorship issue of the commentary on the *De animalibus* contained in the Vatican manuscript. On the one hand, one chronological detail should lead to the definitive dismissal of the attribution to Buridan: the explicit of the text, in fact, indicates that the work was copied in the house of Dynus of Florencia, most likely the Italian physician Dino del Garbo, who died in the first half of the fourteenth century. This makes it unlikely that Buridan's teachings on the *De animalibus* could have already been copied in Italy at that time. On the other hand, Maier and the scholars that repeated her position seem to have based their refutation of Buridan's authorship on doctrinal grounds, without specifying what those grounds are. In general, no serious attention has been paid to the contents of this text and several doctrinal aspects remain to be clarified or studied for the first time. Maier's claim that this commentary has an 'Averroistic' bent, for example, should be better studied: in what sense is the doctrine of these questions Averroistically oriented? What does Maier mean by 'Averroistic'?

The intellectual background of the author of the Vatican commentary and the text's cultural framework will only emerge from a detailed analysis of the text and a comparison with other late-medieval natural philosophical works that engage the controversy between philosophers and physicians. This kind of study could enrich our knowledge of both the late-medieval commentary tradition on the *De animalibus* and of the epistemological relationship between (natural) philosophy and medicine in the fourteenth century.[6]

Asúa, 'El Comentario de Pedro Hispano sobre el *De animalibus*. Transcripción de las Quaestiones sobre la controversia entre médicos y filosofos', cit., 45–66; Id., 'Medicine and Philosophy in Peter of Spain's Commentary on *De animalibus*', cit. and Id., 'War and Peace. Medicine and Natural Philosophy in Albert the Great', cit.

6 I have recently conducted some research on this topic as a 'Notre Dame-SIEPM Fellow' at the Medieval Institute of the University of Notre Dame (IN). The results will be hopefully published next year.

Bibliography

1. Primary Sources

1.1. *Manuscripts*

Basel, Universitätsbibliothek, F VII 4.
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 2164.
Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. Lat. 11.575 (V).
Città del Vaticano, Biblioteca Apostolica Vaticana, Chigi O. IV. 41.
Erfurt, Universitätsbibliothek, CA Q. 299 (E).
Kraków, Biblioteka Jagiellońska, 705.
Leipzig, Universitätsbibliothek, 1416.
Paris, Bibliothèque Nationale de France, Lat. 15888.
Paris, Bibliothèque Nationale de France, Lat. 8513 (P).
Praha, Národní knihovna, 724 (IV.F.18).
München, Bayerische Staatsbibliothek, Clm 18794.
Napoli, Biblioteca Nazionale, VII. G. 74.
Wien, Österreichische Nationalbibliothek, Cod. 5437.
Catalogus codicum manuscriptorum bibliothecae regiae Cat. codd., III/4, Paris 1744.

1.2. *Early Modern Printed Editions*

Albert of Saxony, *Quaestiones in libros* De generatione et corruptione, Venezia 1505, repr. Frankfurt am Main 1970.
Averroes, *Colliget*, Venezia 1574.
Averroes, *In Aristotelis Opera omnia*, Venezia 1562–1574.
Avicenna, *Canon*, Lyon 1498.
Avicenna, *De animalibus*, Venezia 1508, repr. Frankfurt am Main 1961.
Bartholomeus Arnoldi de Usingen, *Exercitium de anima*, Erfurt 1507.
Bartholomeus Arnoldi de Usingen, *Parvulus philosophiae naturalis*, Leipzig 1499.
Dino del Garbo, *De natura fetus*, Venezia 1502.
Giles of Rome, *Quodlibeta*, Leuven 1646.
Isaac Israeli, *Opera Omnia*, Lyon 1515.
Jacopo da Forlì, *Expositio supra capitulum* De generatione embrionis *cum questionibus eiusdem*, Venezia 1502.

Jacques Despars, *In Avicennae Canonem*, Lyon 1498.

Jodocus Trutfetter, *Summa in totam physicen*, Erfurt 1514.

John Buridan, *Quaestiones in libros* De anima, Paris 1516 and 1518.

John Buridan, *Quaestiones in libros* Parva naturalia, Paris 1516 and 1518.

John Buridan, *Quaestiones in* Metaphysicam *Aristotelis*, Paris 1518 [with incorrect date of original publication of 1588], repr. Frankfurt am Main 1964.

John Buridan, *Quaestiones super decem libros* Ethicorum *Aristotelis ad Nicomachum*, Paris 1513, repr. Frankfurt am Main 1968.

John Buridan, *Quaestiones super octo* Physicorum *libros Aristotelis*, Paris 1509, repr. Frankfurt am Main 1964.

John of Jandun, *Quaestiones super* Parva naturalia, Venezia 1570.

John of Jandun, *Quaestiones super* De anima, Venezia 1480.

Marsilius of Inghen, *Quaestiones in libros* De generatione et corruptione, Venezia 1505, repr. Frankfurt am Main 1970.

Peter of Abano, *Conciliator*, Venezia 1565.

Taddeo Alderotti, *Expositiones in arduum aphorismorum Ipocratis volume*, Venezia 1527.

Tommaso del Garbo, *De generatione embryonis*, Venezia 1502.

Tommaso del Garbo, *Summa medicinalis*, Venezia 1531.

1.3. *Editions and Translations*

Albert the Great, *De anima*, ed. C. Stroick, Aschendorff, Münster 1968.

Albert the Great, *De homine*, ed. H. Anzulewicz and J.R. Söder, Aschendorff, Münster 2008.

Albert the Great, *Quaestiones super* De animalibus, ed. E. Filthaut, Aschendorff, Münster 1955.

Alexander of Hales, *Summa theologica*, ed. Quaracchi, Grottaferrata 1928.

Anonymous, *Auctoritates Aristotelis*, ed. by J. Hamesse, in: *Les* Auctoritates Aristotelis. *Un florilège médiéval. Etude historique et édition critique*, Publications Universitaires-B. Nauwelaerts, Leuven-Paris 1974.

Anonymous, *Quaestiones* De anima, ed. by B. Patar, in: *Le* Traité de l'âme *de Jean Buridan* (prima lectura)*, Edition, étude critique et doctrinale*, Editions de l'institut superieur de Philosophie-Editions du Preambule, Louvain-La-Neuve-Longueil 1991.

Anonymous, *Quaestiones* De anima, transl. by B. Patar, in: *Jean Buridan. Commentaire et Questions sur le* Traité de l'âme: *Introduction, traduction et notes*, Les Presses philosophiques, Longueuil 2004.

Anonymous, *Quaestiones super librum* De anima, ed. by P. Bernardini, in: *Anonymi magistri artium Quaestiones super librum* De anima (Siena, Biblioteca comunale, ms. L.3.21, ff. 134ra–174va), SISMEL Edizioni del Galluzzo, Firenze 2009.

Aristotle, *The Complete Works of Aristotle*, ed. J. Barnes, 2 vols., Princeton University Press, Princeton 1984.

Aristotle, *De generatione animalium (translatio vetus)* ed. by A.M.I. Van Oppenraaij, in: *Aristotle*, De Animalibus, *Michael Scot's Arabic-Latin Translation, Part Three, Books* XV–XIX: *Generation of Animals*, Brill, Leiden 1992.

Aristotle, *De generatione animalium (translatio nova)* ed. by H.J. Drossaart Lulofs, in: De generatione animalium, translatio Guillelmi de Moerbeka, Desclee de Brouwer, Bruges-Paris 1966.

Arnaldus of Villanova, *Aphorismi de gradibus*, ed. M.R. McVaugh, Universidat de Barcelona, Barcelona-Granada 1975.

Arnaldus of Villanova, *Tractatus de humido radicali*, ed. M.R. McVaugh, Universitat de Barcelona-Fundació Noguera, Barcelona 2010.

Avicenna, *De anima*, ed. by S. van Riet, in: Avicenna Latinus. Liber de Anima seu Sextus de Naturalibus. *Édition critique de la traduction latine médiévale. Introduction sur la doctrine psychologique d'Avicenne par G. Verbeke, Partes* IV–V, E. Peeters-Brill, Louvain-Leiden 1968.

Benedictus Hesse, *Quaestiones disputate super tres libros* De anima, ed. by W. Bajor, in: Benedicti Hesse Quaestiones disputate super tres libros 'De anima' Aristotelis (Libri II et III). *Editio critica et inquisitio historico-philosophica*, Wydawnictwo KUL, Lublin 2011.

Galen, *De complexionibus*, ed. by R.J. Durling, in: *Burgundio of Pisa's Translation of Galen's* De complexionibus, W. de Gruyter, Berlin-New York 1976.

Galen, *De placitis Hippocratis et Platonis*, CMG V 4, 1, 2, ed. and transl. by P. De Lacy, Akademie, Berlin, 1978–1984.

Galen, *De propriis placitis*, ed. by V. Boudon Millot and A. Pietrobelli, in: 'Galien ressuscité: édition 'princeps' du texte grec du *De Propriis Placitis*', *Revue des études grecques*, 118 (2005), 168–213.

Galen, *De semine*, CMG V 3, 1, ed. and transl. by P. De Lacy, Akademie, Berlin 1992.

Galen, *De usu partium*, transl. by M.T. May, in: *Galen*. On the Usefulness of the Parts of the Body, Cornell University Press, Ithaca, 1968.

Galfridus de Aspale, *Quaestiones super librum* De somno et vigilia, ed. S. Ebbesen, *Cahiers de l'Institut du Moyen-Âge grec et latin* 83 (2014), 257–341.

Giles of Rome, *De formatione humani corporis in utero*, ed. R. Martorelli Vico, SISMEL Edizioni del Galluzzo, Firenze 2008.

John Buridan, *Expositiones* De motibus animalium, ed. by F. Scott and H. Shapiro, in: 'Jean Buridan's *De motibus animalium*', *Isis*, 58 (1967), 533–552.

John Buridan (?), *Lectura Erfordiensis in* I–VI Metaphysicam, ed. by L.M. de Rijk, in: Johannes Buridanus, Lectura Erfordiensis in I–VI Metaphysicam *together with the 15th-century* Abbreviatio Caminensis. *Introduction, Critical Edition and Indexes*, Turnhout, Brepols 2008.

John Buridan, *Quaestiones in* VII Metaphysicam, ed. by M. Mansfeld, in: *Quaestiones in duodecim libros* Metaphysicorum *Aristotelis Jana Burydana (*VII *księga). Edycja krytyczna i analiza historyczno-filozoficzna*, unpublished Ph.D. thesis, University of Silesia, Katowice 2015.

John Buridan, *Quaestiones super tres libros* Metheororum, I, ed. by S. Bages in: *Les* Questiones super tres libros *Metheororum* Aristotelis *de Jean Buridan. Étude suivie de l'édition du livre* I, unpublished Ph.D. thesis, École nationale des chartes, 1986.

John Buridan, *Quaestiones* De anima, II, *tertia lectura*, ed. by P. Sobol, in: *John Buridan on the Soul and Sensation. An Edition of Book* II *of his Commentary on Aristotle's Book on the Soul with an Introduction and a Translation of Question 18 on Sensible Species*, unpublished Ph.D. thesis, Indiana University, Bloomington 1984.

John Buridan, *Quaestiones* De anima, III, *tertia lectura*, ed. by J. Zupko, in: *John Buridan's Philosophy of Mind. An Edition and Translation of Book* III *of his Questions on Aristotle's* De Anima *(Third redaction), with Commentary and Critical and Interpretative Essays*, unpublished Ph.D. thesis, Cornell University, Ithaca 1989.

John Buridan, *Quaestiones et Expositiones super libros* De caelo et mundo, ed. by B. Patar, in: *Ioannis Buridani Expositio et Quaestiones in Aristotelis* De caelo, Éditions de l'Institut supérieur de philosophie-Peeters, Louvain-la-Neuve-Paris 1996.

John Buridan, *Quaestiones in libros* Parva naturalia, ed. by M. Stanek, in: *Jana Burydana. Quaestiones super* Parva naturalia *Aristotelis. Edycja krytyczna i analiza historyczno-filozoficzna*, unpublished Ph.D. thesis, University of Silesia, Katowice 2015.

John Buridan, *Quaestiones* in Physicam, I–II, *ultima lectura*, ed. by M. Streijger and P.J.J.M. Bakker, in: *John Buridan*, Quaestiones super octo libros *Physicorum* Aristotelis (secundum ultimam lecturam): *Libri* I–II, Brill Leiden 2015.

John Buridan, *Quaestiones* in Physicam, III–IV, *ultima lectura*, ed. by M. Streijger and P.J.J.M. Bakker, in: *John Buridan*, Quaestiones super octo libros *Physicorum* Aristotelis (secundum ultimam lecturam): *Libri* III–IV, Brill, Leiden 2016.

John Buridan, *Quaestiones in* Ethicam, X, transl. by J. Kilcullen, in: 'Jean Buridan, Questions on Book X of the *Ethics*', in: A.S. McGrade, J. Kilcullen and M. Kempshall (eds), *The Cambridge Translations of Medieval Philosophical Texts. Volume* II: *Ethics and Political Philosophy*, Cambridge University Press, Cambridge-New York 2001, 498–586.

John Buridan, *Quaestiones super libros* De caelo et mundo, ed. E.A. Moody, The Mediaeval Academy of America, Cambridge (MA), 1942.

John Buridan, *Quaestiones super libros* De caelo et mundo, transl. by A. Ghisalberti, in: *Giovanni Buridano*. Il cielo e il mondo. *Commento al trattato* Del cielo *di Aristotele*, Rusconi, Milano 1983.

John Buridan, *Quaestiones super libros* De generatione et corruptione, ed. by M. Streijger, P.J.J.M. Bakker and J.M.M.H. Thijssen, in: *John Buridan*, Quaestiones super libros De

generatione et corruptione Aristotelis, *A Critical Edition with an Introduction*, Brill, Leiden 2010.

John Buridan, *Summulae de dialectica*, transl. by G. Klima, Yale University Press, New Haven (CT), 2011.

Matthew of Aquasparta, *Quaestiones disputatae* De anima, ed. by A.J. Gondras, Vrin, Paris 1961.

Nicole Oresme, *Quaestiones super* De generatione et corruptione, ed. S. Caroti, Verlag der Bayerischen Akademie der Wissenschaften, München 1996.

Peter of Ailly, *De anima*, ed. by O. Pluta, in: *Die philosophische Psychologie des Peter von Ailly. Ein Beitrag zur Geschichte der Philosophie des späten Mittelalters*, Grüner, Amsterdam 1987.

Peter of Spain, *Quaestiones super libro* De animalibus *Aristotelis*, ed. by F. Navarro Sánchez, in: *Peter of Spain*, Quaestiones super libro *De animalibus* Aristotelis. *Critical Edition with Introduction*, Ashgate, Farnham 2015.

Peter John Olivi, *Quaestiones in secundum librum* Sententiarum, 3 vols., ed. B. Jansen, Quaracchi, Grottaferrata 1922–1926.

pseudo-Albert the Great, *De secretis mulierum*, ed. by J.P. Barragán Nieto, in: *El* De secretis mulierum *atribuido a Alberto Magno: estudio, edición crítica y traducción*, Brepols, Turnhout 2012.

pseudo-Albert the Great, *De secretis mulierum*, transl. by H.R. Lemay, in: *Women's secrets: a Translation of pseudo-Albertus Magnus'* De secretis mulierum *with commentaries*, State University of New York Press, Albany 1992.

Roger Bacon, *Opera hactenus inedita Rogeri Baconi*, ed. R. Steele, Oxford 1911.

Robert Kilwardby, *De spiritu fantastico*, ed. by P.O. Lewry, in: *Robert Kilwardby, O.P., On Time and Imagination*: De tempore, De spiritu fantastico, Oxford University Press, Oxford 1987.

Simon of Faversham, *Quaestiones super librum* De somno et vigilia, ed by. S. Ebbesen, in: 'Simon of Faversham, Quaestiones super librum *De somno et vigilia*. An Edition', *Cahiers de l'Institut du Moyen-Âge grec et latin*, 82 (2013), 90–145.

2. Secondary Sources

Abeele, B. Van den, 'Le *De animalibus* d'Aristote dans le monde latin: modalités de sa réception médiévale', *Frühmittelalterliche Studien*, 33 (1999), 287–318.

Agrimi, J., 'Fisiognomica e 'Scolastica'', *Micrologus*, 1 (1993), 235–271.

Agrimi, J. and Crisciani, C., 'La medicina scolastica: dalla scuola di Salerno alle facoltà universitarie', in: G.P. Brizzi and J. Verger (eds), *Le università dell'Europa. Le scuole e i maestri: il Medioevo*, Pizzi Editore, Milano 1994.

Agrimi, J., 'La ricezione della *Fisiognomica* pseudoaristotelica nella facoltà delle Arti', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 64 (1997), 127–188.

Agrimi, J., *Le* Quaestiones de sensu *attribuite a Oresme e Alberto di Sassonia*, La Nuova Italia Editrice, Firenze 1983.

Agrimi, J., 'Les *Quaestiones de sensu* attribuées à Albert de Saxe. Quelques remarques sur les rapports entre philosophie naturelle et médecine chez Buridan, Oresme et Albert', in: J. Biard (ed), *Itinéraires d'Albert de Saxe*, Vrin, Paris 1991, 191–204.

Ahonen, M., 'Medieval and Early Modern Physiognomy', in: S. Knuuttila and S. Juha (eds), *Sourcebook for the History of the Philosophy of Mind. Philosophical Psychology from Plato to Kant*, Springer, Dordrecht 2014, 633–635.

Asúa, M. de, 'El Comentario de Pedro Hispano sobre la *Isagoge* de Johannitius. Transcripción de las *Quaestiones* sobre la controversia entre médicos y filosofos', *Patristica et Mediaevalia*, 17 (1996), 59–66.

Asúa, M. de, 'El Comentario de Pedro Hispano sobre el *De animalibus*. Transcripción de las *Quaestiones* sobre la controversia entre médicos y filosofos', *Patristica et Mediaevalia*, 14 (1995), 45–66.

Asúa, M. de, 'Medicine and Philosophy in Peter of Spain's Commentary on *De animalibus*', in: C. Steel, G. Guldentops and P. Beullens (eds), *Aristotle's Animals in the Middle Ages and Renaissance*, Leuven University Press, Leuven 1999, 189–211.

Asúa, M. de, 'Pedro de Abano y la controversia entre médicos y filósofos', *Patristica et Mediaevalia*, 18 (1997), 49–66.

Asúa, M. de, 'Peter of Spain's Handling of Authorities in his Commentary on the *Isagoge* of Johannitius', DYNAMIS, 20 (2000), 107–133.

Asúa, M. de, 'The Relationship between Medicine and Philosophy in Peter of Spain's Commentary on the *Articella*', in: *Papers of the Articella Project Meeting. Cambridge, December 1995*, Cambridge Wellcome Unit for the History of Medicine-CSIC Barcelona Department of History of Science, Cambridge-Barcelona 1998, 13–27.

Asúa, M. de, 'War and Peace. Medicine and Natural Philosophy in Albert the Great', in: I.M. Resnick (ed), *A Companion to Albert the Great. Theology, Philosophy, and the Sciences*, Brill, Leiden-Boston 2013, 269–297.

Barragán Nieto, J.P., '*Secretos de las mujeres*. Sangre menstrual y mujer venenosa en la Baja Edad Media', in: C. de la Rosa Cubo (ed), *Innovación Educativa e Historia de las Relaciones de Género*, Universidad de Valladolid, Valladolid 2010, 91–104.

Beneduce, C., 'Conoscenza sensibile e nutrizione: il cardiocentrismo di Giovanni Buridano tra filosofia naturale e medicina' in: G. Garfagnini and A. Rodolfi (eds), Scientia humana e scientia divina. *Conoscenza del mondo e conoscenza di Dio*, ETS, Pisa 2016, 133–146.

Beneduce, C., 'John Buridan's Commentary on pseudo-Albertus Magnus' *De secretis mulierum*', *Bulletin de philosophie médiévale*, 56 (2014), 221–245.

Beneduce, C. and Bakker, P.J.J.M., 'John Buridan and Blasius of Parma on the Localization of the Common Sense', forthcoming.

Beyers, R., *Tradition et traduction: les textes philosophiques et scientifiques grecs au Moyen Age latin. Hommage à Fernand Bossier*, Leuven University Press, Leuven 1999.

Bianchi, L. (ed), *La filosofia nelle università. Secoli* XIII–XIV, La Nuova Italia Editrice, Firenze 1997.

Biard, J., 'Le système des sens dans la philosophie naturelle du XIVe siècle (Jean de Jandun, Jean Buridan, Blaise de Parme)', *Micrologus*, 10 (2002) 335–361.

Biard, J., *Science et nature. La théorie buridanienne du savoir*, Vrin, Paris 2012.

Bildhauer, B., 'The Secrets of Women (c. 1300): a Medieval Perspective on Menstruation', in: *Menstruation: a Cultural History*, G. Howie and A. Shail (eds), Palgrave Macmillan, London-New York 2005, 65–73.

Boer, S.W. de, 'Albert of Saxony', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 37–41.

Boer, S.W. de, 'Buridan on the Internal Senses', *Documenti e studi sulla traduzione filosofica medievale*, XXV (2014), 403–421.

Boer, S.W. de and Bakker, P.J.J.M., 'Is John Buridan the Author of the Anonymous *Traité de l'âme* Edited by Benoît Patar?', *Bulletin de Philosophie Médiévale*, 53 (2011), 283–332.

Boer, S.W. de, *The Science of the Soul. The Commentary Tradition on Aristotle's* De anima, *c. 1260–c. 1360*, Leuven University Press, Leuven 2013.

Boughan, K.M., *Beyond Diet, Drugs, and Surgery: Italian Scholastic Medical Theorists on the Animal Soul, 1270–1400*, unpublished Ph.D. thesis, The University of Iowa 2006.

Boylan, M., 'The Digestive and 'Circulatory' System in Aristotle's Biology', *Journal of the History of Biology*, 15, 1 (1982), 89–118.

Boyle, C., O', *The Art of Medicine. Medical Teachings at the University of Paris, 1250–1400*, Brill, Leiden 1998.

Brower-Toland, S., 'Self-Knowledge and the Science of the Soul in Buridan's *Quaestiones De Anima*', in: G. Klima (ed), *John Buridan's Questions on the Soul*, Springer, Dordrecht, forthcoming.

Bullough, V., *Universities, Medicine and Science in the Medieval West*, Ashgate, Aldershot 2004.

Bydén, B. and Radovic, F., (eds), *Supplementing the Science of the Soul. The* Parva naturalia *in Greek, Arabic, Latin and Hebrew Scholasticism*, forthcoming.

Cadden, J., *Meanings of Sex Difference in the Middle Ages. Medicine, Science and Culture*, Cambridge University Press, Cambridge 1993.

Cadden, J., *The Medieval Philosophy and Biology of Growth: Albertus Magnus, Thomas Aquinas, Albert of Saxony and Marsilius of Inghen on Book I, Chapter V of Aristotle's* De generatione

et corruptione, *with Translated Texts of Albertus and Thomas Aquinas*, Indiana University, unpublished Ph.D. thesis, 1971.

Cadden, J., 'Western Medicine and Natural Philosophy', in: V.L. Bullough and J.A. Brundage (eds), *Handbook of Medieval Sexuality*, Routledge, New York-London 1996, 51–80.

Canet, J.L., 'La mujer venenosa en la época medieval', *Lemir. Revista de Literatura Española Medieval y del Renacimiento*, 1 (1996–1997), http://parnaseo.uv.es/Lemir/Revista/Revista1/Mujer_venenosa.html.

Cappellini, I., 'Date importanti per la biografia di Maestro Tommaso del Garbo e per gli inizi dell'insegnamento medico nello Studio Fiorentino desunte dai codici del Fondo Vaticano latino', *Rivista di storia delle scienze mediche e naturali*, 41 (1950), 212–218.

Caroti, S., '*De generatione et corruptione*, Commentaries on Aristotle's', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 251–256.

Caspar, P., 'La problématique de l'animation de l'embryon. Survol historique et enjeux dogmatique', *Nouvelle revue théologique*, 113 (1991), 3–25, 239–255.

Caston, V., 'Aristotle on Consciousness', *Mind*, 111, 444 (2002), 751–815.

Chandelier, J., *Avicenne et la médecine en Italie. Le* Canon *dans les universités (1200–1350)*, forthcoming.

Chandelier, J., 'Medicine and Philosophy', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 735–742

Chandelier, J. and Robert, A., 'Nature humaine et complexion du corps chez les médecins italiens de la fin du Moyen Âge', *Revue de synthèse*, 134, 6, 4 (2013), 473–510.

Clagett, M., *The Science of Mechanics in the Middle ages*, The University of Wisconsin Press-Oxford University Press, Madison-London 1959.

Coucke, G., '*Non adeo est honesta ut delectabilis*. Sexual Pleasure in Medieval Medicine: the Case of Petrus de Abano', in: C. Casagrande and S. Vecchio (eds), *Piacere e dolore. Materiali per una storia delle passioni nel Medioevo*, SISMEL Edizioni del Galluzzo, Firenze 2009, 117–148.

Courtenay, W.J., 'The University of Paris at the Time of Jean Buridan and Nicole Oresme,' *Vivarium*, 42 (2004), 3–17.

Courtenay, W.J., 'Philosophy's Reward. The Ecclesiastical Income of Jean Buridan', *Recherches de théologie et philosophie médiévales*, 68 (2001), 163–169.

Cova, L., 'Le questioni di Giovanni Vath sul *De generatione animalium*', *Archives d'histoire doctrinale et littéraire du moyen âge*, 59 (1992), 175–287.

Cova, L., 'Il *corpus* zoologico di Aristotele nei dibattiti fra gli 'artisti' parigini alle soglie del XIV secolo', in: O. Weijers and L. Holtz (eds), *L'enseignement des disciplines à la Faculté des arts (Paris et Oxford, XIIIe–XVe siècles). Actes du Colloque international*, Brepols, Turnhout 1997, 281–302.

Cova, L., 'Il *Tractatus de humido radicali* di Arnaldo da Villanova: l'umido radicale nei dibattiti medievali', *Quaestio* 11, 1 (2012), 469–474.

Crisciani, C., 'Aspetti del dibattito sull'umido radicale nella cultura del tardo medioevo (secoli XIII–XV)', in: J. Perarnau (ed), *Actes de la II Trobada Internacional d'Estudis sobre Arnau de Vilanova*, Institut d'Estudis Catalans, Barcelona 2005, 333–380.

Crisciani, C. and Agrimi, J., Edocere medicos: *medicina scolastica nei secoli XIII e XV*, Guerini e Associati, Napoli 1998.

Crisciani, C. and Ferrari, G., 'Introduzione', in: M.R. McVaugh (ed), *Arnaldi de Villanova Opera Medica Omnia*, vol. 2, *Tractatus de humido radicali*, Universitat de Barcelona-Fundació Noguera, Barcelona 2010, 319–571.

Crisciani, C., 'Medicina e filosofia nel Medioevo: aspetti e fasi di un rapporto discusso', *Castelli di Yale*, 9 (2008), 9–35.

Crisciani C., 'Note sul pensiero scientifico medievale. Storiografia, questioni, ricerche', in: F. Bevilacqua and P. Contardini (eds), *Storia, Didattica, Scienze. Pavia 1975–2010. Atti del Convegno. Università di Pavia, 7 maggio 2010*, Pavia University Press, Pavia 2012, 21–35.

Crombie, A.C., *Augustine to Galileo: the History of Science* A.D. *400–1650*, Falcon Educational Book, London 1952 (and subsequent editions).

Del Punta, F., 'The Genre of Commentaries in the Middle Ages and Its Relationship to the Nature and Originality of Medieval Thought' in: J.A. Aertsen and A. Speer (eds), *Was ist Philosophie im Mittelalter? Akten des X. Internationalen Kongresses für mittelalterliche Philosophie der Société Internationale pour l' Etude de la Philosophie Médiévale, 25. bis 30. August 1997 in Erfurt*, W. de Gruyter, Berlin-New York 1998, 138–151.

Demaitre L. and Travill, A.A., 'Human Embryology and Development in the Works of Albertus Magnus', in: J.A. Weisheipl (ed), *Albertus Magnus and the Sciences: commemorative essays*, Pontifical Institute of Medieval Studies, Toronto 1980, 406–440.

Dondaine, A., 'Abréviations latines et signes recommandés pour l' apparat critique des éditions de textes médiévaux', *Bulletin de Philosophie Médiévale*, 2 (1960), 142–149.

Donini, P., 'Psychology', in: R.J. Hankinson (ed), *The Cambridge Companion to Galen*, Cambridge University Press, Cambridge 2008, 184–209.

Drake, S., 'A Further Reappraisal of *impetus* Theory: Buridan, Benedetti and Galileo', *Studies in the History and Philosophy of Science*, 7 (1976), 319–336.

Duhem, P., *Études sur Léonard de Vinci*, 3 vols., Hermann, Paris 1906–1913.

Duhem, P., *Le système du monde: histoire des doctrines cosmologiques de Platon a Copernic*, Hermann, Paris, 1913–1959.

Dunne, M.W. ''The Causes of the Length and Brevity of Life Call for Investigation': Aristotle's *De longitudine et brevitate vitae* in the 13th and 14th Century Commentaries', in: C. Crisciani, L. Repici and P.B. Rossi (eds), Vita longa. *Vecchiaia e durata della vita nella tradizione medica e*

aristotelica antica e medievale. Atti del Convegno internazionale, Torino, 13–14 giugno 2008, SISMEL Edizioni del Galluzzo, Firenze 2009, 121–147.

Dunne, M., 'Thirteenth and Fourteenth-century Commentaries on the *De longitudine et brevitate vitae*', *Early Science and Medicine*, 8, 4 (2003), 320–335.

Dunstan, G.R., *The Human Embryo. Aristotle and the Arabic and European Traditions*, University of Exeter Press, Exeter 1990.

Ebbesen, S., Thomsen Thörnqvist, C. and Decaix, V., 'Questions on *De sensu et sensato*, *De Memoria* and *De Somno et Vigilia*', *Bulletin de philosophie médiévale* 57 (2015), 59–115.

Faral, E., *Jean Buridan, maître ès arts de l'Université de Paris*, Imprimerie Nationale, Paris 1950.

Faral, E., 'Jean Buridan: notes sur les manuscrits, les éditions et le contenu de ses ouvrages', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 15 (1946), 1–53.

Federici Vescovini, G., 'La tradizione dei *Parva naturalia* nell'insegnamento universitario medievale (secoli XIII e XIV)', in: C. Crisciani, R. Lambertini and R. Martorelli Vico (eds), Parva naturalia. *Saperi medievali, natura e vita*, Istituti Editoriali e Poligrafici Internazionali, Pisa-Roma 2004, 125–141.

Federici Vescovini, G., *Le* Quaestiones de anima *di Biagio Pelacani da Parma*, Leo S. Olschki Editore, Firenze 1974.

Federici Vescovini, G., 'Simone di Castello e la medicina dei 'moderni'', in: G. Federici Vescovini (ed), *'Arti' e filosofia nel secolo XIV. Studi sulla tradizione aristotelica e i 'moderni'*, Vallecchi, Firenze 1983, 213–229.

Federici Vescovini, G., 'Simone di Castello, maestro delle Arti a Bologna nella seconda metà del secolo XIV e la medicina dei 'moderni'', *Rivista di filosofia neoscolastica*, 70 (1978) 227–238.

Ferrari, A. de, 'Tommaso del Garbo', in: *Dizionario biografico degli Italiani*, *36* (1988), 581–585.

Ferrari, G., 'La durata della vita: *humidum radicale*, medicina e astrologia nel *Conciliator* di Pietro d'Abano', in: J.-P. Boudet, F. Collard and N. Weill-Parot (eds), *Médecine, astrologie et magie entre Moyen Âge et Renaissance: autour de Pietro d'Abano*, SISMEL Edizioni del Galluzzo Firenze 2013, 107–130.

Ferrari, G., 'Il Trattato *De humido radicali* di Arnaldo de Villanova', in: J. Perarnau (ed), *Actes de la II Trobada Internacional d'Estudis sobre Arnau de Vilanova*, Institut d'Estudis Catalans, Barcelona 2005, 281–331.

Fioravanti, G., Leonardi, C. and Perfetti, S. (eds), *Il commento filosofico nell'occidente latino (secoli 13.–15.): atti del colloquio Firenze-Pisa, 19–22 ottobre 2000, organizzato dalla* SISMEL *(Società Internazionale per lo Studio del Medioevo Latino) e dalla* SISPM *(Società Italiana per lo Studio del Pensiero Medievale), sotto l'egida della* SIEPM, Brepols, Turnhout 2002.

French, R.K., '*De Juvamentis Membrorum* and the Reception of Galenic Physiological Anatomy', *Isis*, 70, 1 (1979), 96–109.

Gabriel, A.L., '*Via antiqua* and *via moderna* and the Migration of Paris Students and Masters to the German Universities in the Fifteenth Century', in: A. Zimmermann (ed), *Antiqui und Moderni. Traditionsbewusstein und Fortschrittsbewusstein im späten Mittelalter*, W. de Gruyter, Berlin-New York 1974, 439–483.

Gaffney, M.A., *The Psychology of the Inner Senses*, Herder, St. Louis (MO) 1942.

Ghisalberti, A., *Giovanni Buridano: dalla metafisica alla fisica*, Vita e Pensiero, Milano 1975.

Ghisalberti, A., 'L'asino di Buridano. Libertà e finalismo in un maestro del secolo XIV', *Ou. Riflessioni e provocazioni* 1 (1996), 45–54.

Ghisalberti, A., 'Somatologia tardomedievale. I problemi del corpo in Giovanni Buridano', in: *Il corpo, perché? Saggi sulla struttura corporea della persona. Contributi del XXXIII Convegno del Centro di studi filosofici di Gallarate (30 marzo–1 aprile)*, Morcelliana, Brescia 1979, 195–210.

Glorieux, P., *La Faculté des arts et ses maîtres au XIII^e siècle*, Vrin, Paris 1971.

Grant, E., *Physical Science in the Middle Ages*, John Wiley & Son, New York 1971 (and subsequent editions).

Green, M.H., 'Flowers, Poisons and Men: Menstruation, in Medieval Western Europe', *Menstruation: a Cultural History*, in: G. Howie and A. Shail (eds.), Palgrave Macmillan, London-New York 2005, 51–63.

Green, M.H., 'Handlist of Latin Manuscripts of Pseudo-Albertus Magnus *Secreta Mulierum* (with a supplemental list of manuscripts of the Dutch, French, German, and Italian translations)', unpublished, 2008.

Green, M.H., *Making Women's Medicine Masculine: The Rise of Male Authority in Pre-Modern Gynecology*, Oxford University Press, Oxford 2008.

Gregoric, P., *Aristotle on the Common Sense*, Oxford University Press, Oxford 2007.

Grellard, C., 'La reception médiévale du *De somno et vigilia*. Approche antrhopologie et épistemologique du rève, d'Albert le Grand à Jean Buridan', in: C. Grellard and P.-M. Morel (eds), *Les* Parva Naturalia *d'Aristote. Fortune antique et médiévale*, Publications de la Sorbonne, Paris 2010, 222–237.

Grellard, C. and Morel, P.-M., *Les* Parva Naturalia *d'Aristote. Fortune antique et médiévale*, Publications de la Sorbonne, Paris 2010.

Guido, F., 'Cenni biografici su Dino e Tommaso del Garbo', in: *Atti del XXI Congresso Internazionale di Storia della Medicina, Siena (Italia), 22–28 settembre 1968*, Arti grafiche Cossidente, Roma 1970, 156–163.

Hall, S., 'Life, Death and the Radical Moisture', *Clio Medica*, 6 (1971), 3–23.

Hallamaa, O., 'Nicholas Oresme', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 884–889.

Hankinson, R.J., 'Galen's Anatomy of the Soul', *Phronesis*, 36, 3 (1991), 197–233.

Harvey, E.R., *The Inward Wits: Psychological Theory in the Middle Ages and the Renaissance*, Warburg Institute, London 1975.

Hasse, D.N., *Avicenna's* De anima *in the Latin West. The Formation of a Peripatetic Philosophy of the Soul, 1160–1300*, The Warburg Institute-Aragno Editore, London-Torino 2000.

Heller-Roazen, D., 'Common Sense. Greek, Arabic, Latin', in: S.G. Nichols, A. Kablitz, and A. Calhoun (eds), *Rethinking the Medieval Senses: Heritage / Fascinations / Frames*, John Hopkins University Press, Baltimore 2008, 30–50.

Heller-Roazen, D., *The Inner Touch. Archaeology of Sensation*, Zone Books, New York 2007.

Hewson, M.A., *Giles of Rome and the Theory of Conception, a Study of the* De formatione corporis humani in utero, The Athlone Press, London 1975.

Hoenen, M.J.F.M., 'Marsilius of Inghen', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 711–717.

Howie G. and Shail A. (eds), *Menstruation: a Cultural History*, Palgrave Macmillan, London-New York 2005.

Jacquart, D. and Thomasset, C., 'Albert Le Grand et les Problémes de la Sexualité', *History and Philosophy of the Life Sciences*, 3, 1 (1981), 73–93.

Jacquart, D., 'Coeur ou cerveau? Les hésitations médiévales sur l'origine de la sensation et le choix de Turisanus', *Micrologus*, 11 (2003), 73–95.

Jacquart, D., 'Commentaire et écriture médicale aux XIVe et XVe siècles', in: G. Fioravanti, C. Leonardi and S. Perfetti (eds), *Il commento filosofico nell'occidente latino (secoli 13.–15.): atti del colloquio Firenze-Pisa, 19–22 ottobre 2000, organizzato dalla* SISMEL *(Società Internazionale per lo Studio del Medioevo Latino) e dalla* SISPM *(Società Italiana per lo Studio del Pensiero Medievale), sotto l'egida della* SIEPM, Brepols, Turnhout 2002, 43–60.

Jacquart, D., 'De *crasis* à *complexio*: note sur le vocabulaire du temperament en latin médiéval', in: G. Sabbah (ed), Textes médicaux latins antiques, Publications de l'Université de Saint-Etienne, Saint-Etienne 1984, 71–76.

Jacquart, D. and Micheau, F., *La médecine arabe et l'Occident médiéval*, G.-P. Maisonneuve et Larose, Paris 1990.

Jacquart, D., *La mèdecine médiévale dans le cadre parisien, XIVe–XVe siècle*, Fayard, Paris 1998

Jacquart, D., *Le milieu médical en France du XIIe au XVe siècle*, Librairie Droz, Genève 1981.

Jacquart, D., 'La nourriture et le corps au Moyen Age', *Cahiers de Recherches Médiévales et Humanistes*, 13 (2006), 259–266.

Jacquart, D., 'La physiognomonie à l'époque de Frédéric II: le traité de Michel Scot', *Micrologus*, 2 (1994), 19–37.

Jacquart, D., 'La place d'Isaac Israeli dans la médecine médiévale', *Vesalius*, 4 (1998) 19–27.

Jacquart, D., 'La scolastica medica', in: M.D. Grmek (ed), *Storia del pensiero medico occidentale, 1. Antichità e Medioevo*, Roma-Bari, Laterza 1993, 261–322.

Jacquart, D., 'Medical Practice in Paris in the First Half of the Fourteenth Century', in: L.G. Ballester, R. French, J. Arrizabalaga and A. Cunningham (eds), *Practical Medicine from Salerno to the Black Death*, Cambridge University Press, Cambridge 1994, 186–210.

Jacquart, D. and Thomasset, C., *Sexualité et savoir medical au Moyen Age*, Presses Universitaires de France, Paris 1985.

Jeudy, C., 'L'*Ars de nomine et verbo* de Phocas: manuscrits et commentaires médiévaux', *Viator*, 5 (1974), 61–159.

Jung, E., 'Intension and Remission of Forms', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 551–554.

Kärkkäinen, P., 'Internal Senses', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 564–567.

Kärkkäinen, P. and Lagerlund, H., 'Philosophical Psychology in 1500: Erfurt, Padua and Bologna', in: S. Heinämaa and M. Reuter (eds), *Psychology and Philosophy: Inquiries into the Soul from Late Scholasticism to Contemporary Thought*, Springer, Dordrecht 2008, 27–45.

Kärkkäinen, P., 'Psychology and the Soul in Late Medieval Erfurt', *Vivarium* 47, 4 (2009), 421–443.

Kemp, S., *Medieval Psychology*, Greenwood, Westport, CT 1990.

Kemp, S. and Fletcher, G.J.O., 'The Medieval Theory of the Inner Senses', *The American Journal of Psychology*, 106, 4 (1993), 559–576.

Kibre, P., 'Arts and Medicine in the Universities in the Later Middle Ages', in: P. Kibre (ed), *Studies in Medieval Science. Alchemy, Astrology, Mathematics and Medicine*, Hambledon Press, London 1984, 214–227.

Kaye, J., *A History of Balance, 1250–1375. The Emergence of a New Model of Equilibrium and its Impact on Thought*, Cambridge University Press, Cambridge 2014.

Klima, G., *John Buridan*, Oxford University Press, Oxford 2009.

Klima, G., 'Nominalist Semantics', in: R. Pasnau and C. van Dyke (eds), *The Cambridge History of Medieval Philosophy*, 1, Cambridge 2010, 159–172.

Kok, F., *A Faithful Philosopher. Philosophy and Theology in John Buridan's Commentary on Aristotle's* Metaphysics, unpublished Ph.D. thesis, Radboud University, Nijmegen 2014.

Kok, F., 'John Buridan's Commentary on the *Metaphysics*', in: F. Amerini and G. Galluzzo (eds), *A Companion to the Latin Medieval Commentaries on Aristotle's* Metaphysics, Brill, Leiden 2014, 495–549.

Knuuttila, S., 'Aristotle's Theory of Perception and Medieval Aristotelianism', in: S. Knuuttila and P. Kärkkäinen (eds), *Theories of Perception in Medieval and Early Modern Philosophy*, Springer, Dordrecht 2008, 1–22.

Knuuttila, S. and Kärkkäinen, P., 'Medieval Theories of Internal Senses', in: S. Knuuttila and J. Sihvola (eds), *Sourcebook for the History of the Philosophy of Mind. Philosophical Psychology from Plato to Kant*, Springer, Dordrecht 2014, 131–145.

Köhler, T.W., Homo animal nobilissimum: *Konturen des spezifisch Menschlichen in der naturphilosophischen Aristoteleskommentierung des dreizehnten Jahrhunderts*, 1, Brill, Leiden 2008.

Krappe, A.H., 'The Legend of Buridan and the Tour de Nesle', *Modern Language Review*, 23 (1928), 216–222.

Krieger, G., 'Bietet 'Buridan's Esel' den Schlüfiel zum Verständnis der Philosophie des Johannes Buridanus?' in: E.P. Bos and H.A. Krop (eds), *John Buridan: A Master of Arts. Some Aspects of His Philosophy*, Ingenium Publishers, Nijmegen 1993, 121–140.

Krieger, G., *Der Begriff der praktischen Vernunft nach Johannes Buridanus*, Aschendorff, Münster 1986.

Krieger, G., *Subjekt Und Metaphysik Die Metaphysik des Johannes Buridan*, Aschendorff, Münster 2003.

Kuksewicz, Z., 'Remarque au catalogue des manuscrits des œuvres de Jean Buridan. Un recueil de questions dans le manuscrit Paris Bibl. Nat. 15888', *Mediaevalia Philosophica Polonorum*, 9 (1961), 31–39.

Kuhn, T., *The Copernican Revolution*, Harvard University Press, Cambridge (MA) 1957 (and subsequent editions).

Lacy, P. de, 'The Third Part of the Soul', in P. Manuli and M. Vegetti (eds), *Le opere psicologiche di Galeno*, Bibliopolis, Napoli 1986, 43–63.

Lagerlund, H., 'John Buridan and the Problem of Dualism in the Early Fourteenth century', *Journal of the History of Philosophy* 42, 4 (2004), 369–387.

Lagerlund, H., 'Making Aristotle Modern: John Buridan on Psychology and Language', in: P.J.J.M. Bakker and J.M.M.H. Thijssen (eds), *The Tradition of Commentaries on Aristotle's* De Anima, Ashgate Studies in Medieval Philosophy, Aldershot 2007, 69–85.

Lagerlund, H., 'The Mind/Body Problem and Late Medieval Conceptions of the Soul', in: H. Lagerlund (ed), *Forming the Mind. Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, Springer, Dordrecht 2007, 1–15.

Lagerlund, H., 'The Unit of Efficient and Final Causality: the Mind/Body Problem Reconsidered', *British Journal of the History of Philosophy* 19, 4 (2011), 587–603.

Land, K. van 't, 'Sperm and Blood, Form and Food. Late Medieval Medical Notions of Male and Female in the Embryology of *Membra*' in: M. Horstmanshoff, H. King and C. Zittel (eds), *Blood, Sweat and Tears. The Changing Concepts of Physiology from Antiquity into Early Modern Europe*, Brill, Leiden 2012, 363–392.

Laqueur, T., *Making Sex: Body and Gender from the Greeks to Freud*, Harvard University Press, Cambridge 1990.

Leemans, P. de, 'Medieval Latin Commentaries on Aristotle's *De motu animalium*', *Recherches de Theologie et Philosophie Medievales*, 67, 2 (2000), 272–360.

Leemans, P. de, '*Parva naturalia*, Commentaries on Aristotle's', in: H. Lagerlund (ed), *Encyclopedia of Medieval Philosophy. Philosophy between 500 and 1500*, Springer, Dordrecht 2011, 917–923.

Libera, A. de, 'Le sens commun au XIIIè siècle. De Jean de La Rochelle à Albert le Grand', *Revue de Métaphysique et de Morale*, *96*, 4 (1991), 475–496.

Lindberg, D., *The Beginnings of Western Science: the European Scientific Tradition in Philosophical, Religious, and Institutional Context, 600 B.C. to A.D. 1450*, University of Chicago Press, Chicago 1992.

Lohr, C.H., *Latin Aristotle Commentaries. V. Bibliography of Secondary Literature*, SISMEL Edizioni del Galluzzo, Firenze 2005.

Lohr, C.H. and Colomba, C., *Latin Aristotle Commentaries. Medieval authors: A–L*, SISMEL Edizioni del Galluzzo, Firenze 2013, 246–267.

Lohr, C., 'Medieval Latin Aristotle Commentaries. Authors Jacobus-Johannes Juff', *Traditio*, *26* (1970), 135–216.

Lugt, M. van der, 'L'animation de l'embryon humain dans la pensée médiévale', in: L. Brisson, M.-H. Congourdeau and J.-L. Solère (eds), *L'embryon: formation et animation. Antiquité grecque et latine, tradition hébraïque, chrétienne et islamique*, Vrin, Paris 2008, 233–254.

Lugt, M. van der, *La ver, le démon et la vierge. Les théories médièvales de la génération extraordinaire*, Les Belles Lettres, Paris 2004.

Maier, A., *An der Grenze von Scholastik und Naturwissenschaft: die Struktur der materiellen Substanz, das Problem der Gravitation, die Mathematik Formlatituden*, 2 vols, Storia e Letteratura, Roma 1952.

Maier, A., Codices Vaticani Latini. Codices *2118–2192*, Bibliotheca Vaticana, Città del Vaticano 1961, 122–129.

Maier, A., 'Die naturphilosophische Bedeutung der scholastischen Impetus-theorie', *Theologie und Philosophie* 30, 3 (1955), 321–343.

Maier, A., *Studien zur Naturphilosophie der Spätscholastik*, Storia e Letteratura, Roma 1949–1958.

Manuli, P. and Vegetti, M., *Cuore, sangue e cervello*, Episteme, Milano 1977.

Marinozzi, S., 'Umido radicale ed invecchiamento nel primo Evo Moderno', *Medicina nei Secoli* 22, 1–3 (2010), 531–552.

Markowski, M., 'L'influence de Jean Buridan sur les universités d'Europe centrale', in: Z. Kaluza and P. Vignaux (eds), *Preuve et raisons à l'Université de Paris: logique, ontologie et théologie au XIV^e siècle*, Vrin, Paris 1984, 149–163.

Marshall, P., 'Parisian Psychology in the Mid-fourteenth Century', *Archives d'histoire doctrinale et littéraire du Moyen Age*, 50 (1983), 101–193.

Martino, C. di, Ratio particularis. *La doctrine des sens internes D'Avicenne a Thomas D'Aquin: contribution a l'etude de la tradition arabo-latine de la psychologie d'Aristote*, Vrin, Paris 2008.

Martorelli Vico, R., 'La medicina scolastica tra galenismo e aristotelismo', *Studi Medievali*, 41 (2000), 311–338.

Martorelli Vico, R., *Medicina e filosofia. Per una storia dell'embriologia medievale nel XIII e XIV secolo*, Guerini e Associati, Milano 2002.

Martorelli Vico, R., 'Tra medicina e filosofia: il *Conciliator* di Pietro d'Abano sulla dottrina aristotelica della generazione', in: C. Crisciani, R. Lambertini and R. Martorelli Vico (eds), *Parva naturalia. Saperi medievali, natura e vita. Atti dell'XI Convegno della Società Italiana per lo Studio del Pensiero Medievale, (Macerata, 7–9 dicembre 2001)*, Istituti Editoriali e Poligrafici Internazionali, Roma-Pisa 2004, 73–81

McVaugh, M.R., 'Medicine and Art in the Thirteenth-century Paris', in: E.Y. Spencer (ed), *Crossing Boundaries at Medieval Universities*, Brill, Turnhout 2010, 189–212.

McVaugh, M.R., 'The *Humidum Radicale* in Thirteenth-century Medicine', *Traditio*, 30 (1974), 259–283.

Michael, B., *Johannes Buridan: Studien zu seinem Leben, seinen Werken und zur Rezeption seiner Theorien im Europa des späten Mittelalters*, 2 vols., unpublished Ph.D. thesis, Freie Universität Berlin 1985.

Montero Cartelle, E., *Tipologia de la literatura médica latina: Antigüedad, Edad media, Renacimiento*, Brepols, Turnhout 2010.

Moody, E.A., 'Galileo and his Precursors', in: C.L. Golino (ed), *Galileo Reappraised*, University of California Press, Berkeley 1966, 23–43.

Moreau, E., 'Radical Moisture', in: M. Sgarbi (ed), *Encyclopedia of Renaissance Philosophy*, Springer, 2015, doi:10.1007/978-3-319-02848-4_403–1.

Mura, G., *Ermeneutica e verità: storia e problemi della filosofia dell'interpretazione*, Città nuova, Roma 1990.

Murdoch, J.E., 'Pierre Duhem and the History of Late Medieval Science and Philosophy in the Latin West', in: R. Imbach and A. Maierù (eds), *Gli Studi di Filosofia Medievale fra Otto e Novecento*, Storia e Letteratura, Roma 1991, 253–302.

Nardi, G.M., *Problemi d'embriologia umana antica e medievale*, G.C. Sansoni Editore, Firenze 1938.

Ottosson, P.-G., *Scholastic Medicine and Philosophy. A Study of Commentaries on Galen's* Tegni *(ca. 1300–1400)*, Bibliopolis, Napoli 1984.

Pagel, W., 'Harvey, Foetal Irritability – and Albertus Magnus', *Medical History*, 10, 4 (1966), 409–411.

Pagel, W., 'Medieval and Renaissance Contributions to the Knowledge of the Brain and its Functions', in: F.N.L. Poynter (ed), *The History and Philosophy of Knowledge of the Brain and its Functions: an Anglo-American Symposium, London, July 15th–17th, 1957*, Israël, Amsterdam 1973, 95–114.

Paqué, R., *Das Pariser Nominalistenstatut. Zur Entstehung des Realitätsbegriffs der neuzeitlichen Naturwissenschaft*, W. de Gruyter, Berlin 1970.

Park, K., *Doctors and Medicine in Early Renaissance Florence*, Princeton University Press, Princeton 1985.

Park, K., 'Medicine and Natural Philosophy: Naturalistic Traditions', in: J. Bennett and R.M. Karras (eds), *The Oxford Handbook of Women and Gender in Medieval Europe*, Oxford University Press, Oxford 2013, 84–100.

Pasnau, R., 'Scholastic Qualities, Primary and Secondary', in: L. Nolan (ed), *Primary and Secondary Qualities. The Historical and Ongoing Research*, Oxford University Press, Oxford 2011, 41–61.

Perfetti, S., *Animali pensati nella filosofia tra Medioevo e prima età moderna*, ETS, Pisa 2012.

Perfetti, S., 'La rigenerazione degli animali. Alberto Magno tra *Parva naturalia* e *De animalibus*', in: C. Crisciani, L. Repici and P. Rossi (eds), *Vita longa. Vecchiaia e durata della vita nella tradizione medica e aristotelica antica e medievale. Atti del Convegno internazionale, Torino, 13–14 giugno 2008*, SISMEL Edizioni del Galluzzo, Firenze 2009, 149–168.

Perfetti, S., 'How and When the Medieval Commentary Died out: the Case of Aristotle's Zoological Writings', in: G. Fioravanti, C. Leonardi and S. Perfetti (eds), *Il commento filosofico nell'occidente latino (secoli 13.–15.): atti del colloquio Firenze-Pisa, 19–22 ottobre 2000, organizzato dalla* SISMEL *(Società Internazionale per lo Studio del Medioevo Latino) e dalla* SISPM *(Società Italiana per lo Studio del Pensiero Medievale), sotto l'egida della* SIEPM, Brepols, Turnhout 2002, 429–444.

Perfetti, S., 'I libri *De animalibus* di Aristotele e i saperi sugli animali nel XIII secolo', in: C. Crisciani, R. Lambertini, and R. Martorelli Vico (eds), Parva naturalia. *Saperi medievali, natura e vita*, Istituti Editoriali e Poligrafici Internazionali, Pisa-Roma 2004, 143–170.

Pinborg, J. (ed), *The Logic of John Buridan. Acts of the Third European Symposium on Medieval Logic and Semantics: Copenhagen, 16–21 November 1975*, Museum Tusculanum Press, Copenhagen 1976.

Pluta, O., 'How Matter Becomes Mind: Late-Medieval Theories of Emergence', in: H. Lagerlund (ed), *Forming the Mind. Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, Springer, Dordrecht 2007, 149–168.

Pluta, O., 'Persecution and the Art of Writing. The Parisian Statute of April 1, 1272, and Its Philosophical Consequences', in: P.J.J.M. Bakker (ed), *Chemins de la pensée médiévale. Études offertes à Zénon Kaluza*, Brepols, Turnhout 2002, 563–585.

Pluta, O., 'The Transformations of Alexander of Aphrodisias' Interpretation of Aristotle's Theory of the Soul', in: M. Pade (ed), *Renaissance Readings of the* corpus aristotelicum: *Proceedings of the Conference held in Copenhagen, 23–25 April 1998*, Museum Tusculanum Press, Copenhagen 2001, 147–165.

Preus, A., 'Galen's Criticism of Aristotle's Conception Theory', *Journal of the History of Biology*, 10, 1 (1997), 65–85.

Preus, A., 'Science and Philosophy in Aristotle's *Generation of Animals*', *Journal of the History of Biology*, 3, 1 (1970), 1–52.

Rashed, M., 'Agrégat de parties ou *vinculum substantiale*? Sur une hésitation conceptuelle et textuelle du *corpus* aristotélicien', in: A. Laks and M. Rashed (eds), *Aristote et le mouvement des animaux. Dix études sur le* De motu animalium, Presses Universitaires du Septentrion, Villeneuve d'Ascq 2004, 185–202.

Reynolds, P.L., *Food and the Body: Some Peculiar Questions in High Medieval Theology*, Brill, Leiden 1999.

Rocca, J., 'Anatomy', in: R.J. Hankinson (ed), *The Cambridge Companion to Galen*, Cambridge University Press, Cambridge 2008, 242–262.

Rocca, J., *Galen on the Brain. Anatomical Knowledge and Physiological Speculation in the Second Century* AD, Brill, Leiden 2003.

Schabel, C., 'Francis of Marchia's *virtus derelicta* and the Context of Its Development', *Vivarium* 44, 1 (2006), 41–80.

Schäfer, D., 'More than a Fading Flame. The Physiology of the Old Age between Speculative Analogy and Experimental Method' in: H.F.J. Horstmanshoff (ed), *Blood, Sweat and Tears: the Changing Concepts of Physiology from Antiquity into Early Modern Europe*, Brill, Leiden 2012, 241–266.

Schönberger, R., *Relation als Vergleich. Die Relationstheorie des Johannes Buridan im Kontext seines Denkens und der Scholastik*, Brill, Leiden 1994.

Schum, W., *Beschreibendes Verzeichnis der Amplonianischen Handschriften-Sammlung zu Erfurt*, Weidmannsche Buchhandlung, Berlin 1887.

Sechler, S., *Rectors of the Fourteenth-century University of Paris: An Institutional and Prosopographical Study*, unpublished Ph.D. thesis, University of Wisconsin-Madison (WI) 1997.

Sihvola, J., 'The Problem of Consciousness in Aristotle's Psychology', in: S. Heinämaa, V. Lähteenmäki and P. Remes (eds), *Consciousness. From Perception to Reflection in the History of Philosophy*, Springer, Dordrecht 2007, 49–65.

Silva, J.F., 'Robert Kilwardby on Sense Perception', in: S. Knuuttila and P. Kärkkäinen (eds), *Theories of Perception in Medieval and Early Modern Philosophy*, Springer, Dordrecht 2008, 87–99.

Siraisi, N.G., 'Medical Scholasticism and the Historians', in N.G. Siraisi (ed), *Medicine in the Italian Universities, 1250–1600*, Brill, Leiden 2001, 140–156.

Siraisi, N.G., 'Medicine and Surgery', in: N.G. Siraisi, *Arts and Sciences at Padua: the Studium of Padua before 1350*, Pontifical institute of Mediaeval Studies, Toronto 1973, 141–171.

Siraisi, N.G., *Medieval and Early Renaissance Medicine: an Itroduction to Knowledge and Practice*, The University of Chicago Press, Chicago 1990.

Siraisi, N.G., *Taddeo Alderotti and his Pupils. Two Generations of Italian Medical Learning*, Princeton University Press, Princeton 1981.

Siraisi, N.G., 'The Medical Learning of Albertus Magnus', in: A. Weisheipl (ed), *Albertus*

Magnus and the Science, Pontifical Institute of Mediaeval Studies, Toronto 1980, 379–440.

Sobol, P., 'Sensations, Intentions, Memories and Dreams', in: J.M.M.H. Thijssen and J. Zupko (eds.), *The Metaphysics and Natural Philosophy of John Buridan*, Brill, Leiden 2001, 183–198.

Steel, C., Guldentops G. and Beullens, P., *Aristotle's Animals in the Middle Ages and Renaissance*, Leuven University Press, Leuven 1999.

Steneck, N.H., 'A Late Medieval Debate Concerning the Primary Organ of Perception', in: *Actes du XIIIe Congres International d'Histoire des Sciences: Moscou, 18–24 Aout 1971*, Ed. Naouka, Moscow 1974, 198–209.

Steneck, N.H., 'Albert the Great on the Classification and Localization of the Internal Senses', *Isis*, 65, 2 (1974), 193–211.

Steneck, N.H., *The Problem of the Internal Senses in the Fourteenth Century*, unpublished Ph.D. thesis, University of Wisconsin 1970.

Sylla, E., 'Guide to the Text', in: M. Streijger and P.J.J.M. Bakker (eds), John Buridan, *Quaestiones super octo libros Physicorum Aristotelis (secundum ultimam lecturam): Libri I–II*, Brill, Leiden 2015, XLIII–CLXXXVI.

Sylla, E., 'Medieval Concepts of the Latitude of Forms. The Oxford Calculators', *Archives d'Histoire Doctrinale et Littéraire du Moyen Âge*, 40 (1973), 223–283.

Temkin, O., 'On Galen's Pneumatology', *Gesnerus*, 8, 1–2 (1951), 180–189.

Thijssen, J.M.M.H., 'Buridan, John (Jean)', in: N. Koertge (ed), *New Dictionary of Scientific Biography*, 1, Thomson Gale, Farmington Hills 2008, 446–448.

Thijssen, J.M.M.H., 'Late-medieval Natural Philosophy: Some Recent Trends in Scholarship', *Recherches de Théologie et Philosophie Médiévales*, 67 (2000), 169–201.

Thijssen, J.M.M.H., 'The Buridan School Reassessed. John Buridan and Albert of Saxony', *Vivarium* 42, 1 (2004) 18–42.

Thijssen, J.M.M.H. and Zupko, J. (eds), *The Metaphysics and Natural Philosophy of John Buridan*, Brill, Leiden 2001.

Thorndike, L., *A History of Magic and Experimental Science*, II, Columbia University Press, New York 1923.

Thorndike, L., 'Buridan's Questions on the *Physiognomy* Ascribed to Aristotle', *Speculum*, 18 (1943), 99–103.

Thorndike, L. and Kibre, P., *Catalogue of Incipits of Medieval Scientific Writings in Latin*, Mediaeval Academy of America, Cambridge (MA) 1963.

Thorndike, L., 'De *complexionibus*', *Isis* 49, 4 (1958), 398–408.

Tieleman, T., *Galen and Chrysippus on the Soul*, Brill, Leiden 1996, 55–60.

Toivanen, J., *Perception and the Internal Senses. Peter of John Olivi on the Cognitive Functions of the Sensitive Soul*, Brill, Leiden 2013.

Wallace, W.A., 'Galileo and Scholastic Theories of *impetus*', in: A. Maierù and A. Paravicini Bagliani (eds), *Studi sul* XIV *secolo in memoria di Anneliese Maier*, Storia e Letteratura, Roma 1981, 275–297.

Wallace, W.A., *Prelude to Galileo. Essays on Medieval and Sixteenth-century Sources of Galileo's Thought*, D. Reidel, Dordrecht 1981.

Weijers, O., *La* disputatio *à la Faculté des Arts de Paris (1200–1350 environ): esquisse d'une typologie*, Brepols, Turnhout 1995.

Weijers, O., *La* disputatio *dans les Facultés des Arts au Moyen Âge*, Brepols, Turnhout 2002.

Weijers, O. and Holtz, L., *L'enseignement des disciplines à la Faculté des arts: Paris et Oxford, 13.–15. Siècles. Actes du colloque international*, Brepols, Turnhout 1997.

Weijers, O., 'L'organe du sens commun chez les auteurs de la première moitié du XIIIe siècle', in: A. Bertolacci and A. Paravicini Bagliani (eds), *La Filosofia Medievale tra Antichità ed Età Moderna. Saggi in memoria di Francesco Del Punta (1941–2013)*, SISMEL Edizioni del Galluzzo, Firenze 2016, forthcoming.

Weijers, O., *Le travail intellectuel à la faculté des Arts de Paris: Textes et maîtres (ca. 1200–1250)*, IV, Brepols, Turnhout 2001.

Wingate, S.D., *The Mediaeval Latin Versions of the Aristotelian Scientific* corpus: *with Special Reference to the Biological Works*, The Courier Press, London 1931 (and subsequent editions).

Wolfson, H.A., 'The Internal Senses in Latin, Arabic, and Hebrew Philosophic Texts', *The Harvard Theological Review*, 28, 2 (1935), 69–133.

Zanier, G., 'Il problema della *complexio* e la nozione del vivente in Marsilio di Inghen', *Esercizi Filosofici/Testi*, 6 (2002), 69–77.

Zanin, F., 'Francis of Marchia, *virtus derelicta*, and Modifications of the Basic Principles of Aristotelian Physics', *Vivarium* 44, 1 (2006), 81–95.

Ziegler, J., 'Philosophers and Physicians on the Scientific Validity of Latin Physiognomy, 1200–1500', *Early Science and Medicine*, 12, 3 (2007), 285–312.

Zupko, J., 'How are the Souls Related to Bodies? A Study of John Buridan', *Review of Metaphysics* 46 (1993), 575–601.

Zupko, J., 'John Buridan on the Immateriality of the Intellect', in: H. Lagerlund (ed), *Forming the Mind. Essays on the Internal Senses and the Mind/Body Problem from Avicenna to the Medical Enlightenment*, Springer, Dordrecht 2007, 129–147.

Zupko, J., *John Buridan: Portrait of a Fourteenth-century Arts Master*, University of Notre Dame Press, Notre Dame (IN) 2003.

Zupko J., 'John Buridan', The Stanford Encyclopedia of Philosophy (Spring 2014 Edition), Edward N. Zalta (ed), URL = http://plato.stanford.edu/archives/spr2014/entries/buridan/.

Zupko, J., 'On Buridan's Alleged Alexandrianism: Heterodoxy and Natural Philosophy in Fourteenth-century Paris', *Vivarium* 42, 1 (2004), 43–57.

Zupko, J., 'Self-Knowledge and Self-Representation in Later Medieval Psychology', in P.J.J.M. Bakker and J.M.M.H. Thijssen (eds), *Mind, Cognition and Representation: The Tradition of Commentaries on Aristotle's* De Anima, Ashgate, Aldershot 2007, 87–107.

Samenvatting

Dit proefschrift bestudeert de relatie tussen natuurfilosofie en geneeskunde in de werken van Johannes Buridanus († ca. 1361), met name in zijn commentaren op *De anima*, *De generatione et corruptione*, *Parva naturalia* (voornamelijk *De longitudine et brevitate vitae* en *De morte et vita*), en *De secretis mulierum*. Tevens presenteert dit proefschrift een eerste kritische editie van Buridanus' *quaestiones*-commentaar op pseudo-Albertus Magnus' werk *De secretis mulierum* (*De geheimen van vrouwen*). Door aandacht te besteden aan nog niet eerder bestudeerde, voor een deel ongepubliceerde teksten werpt dit onderzoek nieuw licht op onbekende aspecten van Buridanus' denken. Ik breng de voornaamste kenmerken van Buridanus' beschrijving van het menselijk lichaam in kaart, in het bijzonder zijn beschrijving van lichamelijke functies als waarneming, voeding, voortplanting, gezondheid en ziekte, ouder worden en sterven. Uiteindelijk hoop ik aan te tonen dat Buridanus' beschrijving van levende organismen in belangrijke mate gebaseerd is op medische overwegingen. Buridanus' teksten geven aanleiding de vraag te stellen in hoeverre zijn ideeën over biologische fenomenen blijven binnen de Aristotelische kaders waarin hij zijn filosofie ontwikkelde.

Hoofdstuk 1

Dit hoofdstuk presenteert een historisch overzicht van het onderzoek naar Buridanus, beginnend bij studies over Buridanus' *'impetus'*-theorie tot en met hedendaagse onderzoek naar diverse andere aspecten van Buridanus' filosofie. Uit dit overzicht blijkt dat Buridanus' natuurfilosofie een steeds prominentere plaats is gaan innemen in het onderzoek. In de afgelopen decennia zijn belangrijke natuurfilosofische teksten van Buridanus voor het eerst uitgegeven, en is zijn natuurfilosofische gedachtegoed, voornamelijk zijn opvattingen over de psychologie, in het centrum van de belangstelling komen te staan. Recentelijk is ook Buridanus' commentaar op Aristoteles' *Parva naturalia* uitgegeven. Tegen de achtergrond van deze ontwikkelingen baken ik een nieuw onderzoeksgebied af, te weten de relatie tussen natuurfilosofie en geneeskunde in Buridanus' commentaren op natuurfilosofische teksten. Dit onderzoek richt zich voornamelijk op de vraag of, hoe, en in welke mate Buridanus gebruik maakt van traditionele en contemporaine medische bronnen en theorieën. Deze onderzoeksvraag is met name daarom van belang omdat Buridanus een 'echte'

natuurfilosoof was, die werkte in een institutionele omgeving (de Universiteit van Parijs) waar de *artes liberales* en de geneeskunde duidelijk institutioneel van elkaar gescheiden waren.

Hoofdstuk 2

In dit hoofdstuk, dat noodzakelijk is voor de consistentie van dit proefschrift, wordt in detail beargumenteerd dat Buridanus de auteur is van de *Quaestiones de secretis mulierum* (een *quaestiones*-commentaar op Pseudo-Albertus Magnus' *De geheimen van vrouwen*). Het commentaar is bewaard gebleven in handschrift Erfurt, Universitätsbibliothek, Dep. Erf., CA Q.299. Mijn argumentatie is voornamelijk gebaseerd op een vergelijking tussen de eerste *quaestio* in het Erfurt handschrift met een *quaestio* uit Buridanus' commentaar op Aristoteles' *De generatione et corruptione*. Beide teksten vertonen opvallende overeenkomsten in structuur, formulering en inhoud. In dit hoofdstuk laat ik tevens zien dat Buridanus *niet* de auteur is van een andere tekst over de geheimen van vrouwen bewaard in handschrift Paris, Bibliothèque Nationale de France, lat. 8513. De tekst in het Parijse handschrift is geen commentaar van Buridanus op de *De secertis mulierum* van Pseudo-Albertus Magnus, maar veeleer een andere versie van Pseudo-Albertus' tekst.

Hoofdstuk 3

De centrale hoofdstukken van dit proefschrift (hoofdstukken drie en vier), bevatten de details van mijn analyse van de relatie tussen natuurfilosofie en geneeskunde in Buridanus' werken. Om een antwoord te kunnen geven op mijn onderzoeksvraag, presenteer ik vier case studies. Twee case studies (de discussie over het centrale orgaan in het lichaam en de kwestie van de specifieke functies van man en vrouw bij de voortplanting) hebben betrekking op de zogenaamde 'controverse tussen filosofen en medici'. De andere twee case studies zijn gebaseerd op medische concepten die een grote invloed hadden op middeleeuwse beschrijvingen van fysieke fenomenen, te weten de concepten van '*complexio*' en '*humidum radicale*'. Hoofdstuk drie analyseert de eerste twee case studies. Op basis van Buridanus' commentaren op *De anima* en de *Parva naturalia*, wordt in de case study over het centrale orgaan in het lichaam Buridanus' opvatting beschreven over de vraag waar de zogenaamde '*sensus communis*' zich bevindt (in het hoofd of in het hart) en over de vraag waar aderen en bloed vandaan

komen. De tweede case study onderzoekt Buridanus' theorie van de menselijke voortplanting zoals deze beschreven wordt in zijn commentaar op *De secretis mulierum*. De manier waarop Buridanus deze controversiële onderwerpen behandelt, toont aan dat hij niet alleen zocht naar een harmonie tussen elkaar tegensprekende opvattingen van filosofen en medici, maar dat hij van deze controversiële onderwerpen gebruik maakte om een eigen, meer ontwikkelde beschrijving te geven van fysieke processen, waarin medische ideeën een belangrijke rol spelen.

Hoofdstuk 4

Dit hoofdstuk analyseert het concept van '*complexio*' en '*humidum radicale*' in Buridanus' commentaren op *De generatione et corruptione*, *Parva naturalia* en *De secretis mulierum*. Buridanus gebruikt het medische idee van een 'balans' van lichamelijke kwaliteiten en *humores* in zijn uiteenzettingen over de mogelijkheid van een volmaakt gebalanceerde lichaamssamenstelling, over de lengte van het leven, en over de vergelijking tussen de vrouwelijke menstruatie en de fases van de maan. In al deze gevallen, maar met name in het geval van zijn uiteenzetting over de lengte van het leven, toont Buridanus aan dat hij een relatief en comparatief begrip van '*complexio*' hanteert, dat typerend was zowel voor de eerdere medische traditie als voor de medische werken van zijn eigen tijd. Het cluster van concepten dat betrekking heeft op '*humidum radicale*' wordt door Buridanus gebruikt in zijn discussies over het ouder worden en sterven van een organisme. Uit zijn commentaar op de *Parva naturalia* blijkt dat Buridanus bekend was met eerdere medische theorieën over '*humidum radicale*' en '*humidum nutrimentale*' (in het bijzonder met de opvattingen van Arnaldus de Villanova en Petrus de Abano over lichaamssappen). Ook blijkt uit deze werken dat Buridanus bekend was met contemporaine discussies over lichaamssappen, waarin het conceptuele paar '*humidum fluens*' en '*humidum consolidatum*' een belangrijke rol speelt.

Hoofdstuk 5

In het laatste hoofdstuk wordt de analyse uit de voorgaande hoofdstukken samengevat en worden enkele algemene conclusies getrokken ten aanzien van de bijdrage die dit proefschrift levert aan het onderzoek naar Buridanus' filosofie. Deze conclusies onderstrepen Buridanus' interesse voor medische ideeën en zijn bereidheid om de geneeskunde te integreren in zijn commentaren op natuurfilosofische werken, met

het doel zijn eigen beschrijvingen van biologische fenomenen en processen te verfijnen. De conclusies tonen tevens aan dat Buridanus' visie op het menselijke lichaam grotendeels binnen de conceptuele en theoretische kaders van de Aristotelische filosofie blijft. Dit is overeenkomstig de verwachtingen: als *magister artium* had Buridanus de taak commentaar te geven op Aristoteles' (natuur-) filosofische werken. Tegelijkertijd wordt zijn Aristotelische basis aangevuld en verrijkt door een andere tak van kennis: de geneeskunde.

In mijn conclusies merk ik tevens op dat mijn analyse van Buridanus nader uitgewerkt moet worden in toekomstig onderzoek naar de relatie tussen natuurfilosofie en geneeskunde in de Parijse *Artes* Faculteit, zowel *voor* als *na* Buridanus. Vanuit dit perspectief is aan het Italiaanse *milieu* al relatief veel aandacht besteed, maar de universiteiten ten noorden van de Alpen zijn op dit punt nog nauwelijks bestudeerd. Bij de verdere uitwerking van mijn analyse verdient met name de commentaartraditie op Aristoteles' *Parva naturalia* meer aandacht. Tot slot, vanuit algemeen methodologisch perspectief benadruk ik het belang om Buridanus' werken in hun eigen historische terminologie en context te bestuderen. Alleen op deze manier kunnen nieuwe of tot dusver ondergewaardeerde aspecten van zijn denken aan het licht komen. Mijn proefschrift laat zien dat Buridanus een veelzijdig auteur was, die de filosofie vanuit meerdere kanten benaderde en die zocht naar een creatieve manier om gezaghebbende teksten te interpreteren met als doel een omvattende beschrijving van de realiteit te bieden.

Sommario

Questo lavoro considera la relazione tra filosofia naturale e medicina nelle opere di Giovanni Buridano († 1361 ca.), soprattutto nei suoi commenti al *De anima*, al *De generatione et corruptione*, ai *Parva naturalia* (in particolare, il *De longitudine et brevitate vitae* e il *De morte et vita*), e al *De secretis mulierum*, di cui presenta, in appendice, la prima edizione critica. Prendendo in esame testi poco studiati, o parzialmente inediti, questa ricerca getta luce su aspetti sconosciuti del pensiero di Buridano: la descrizione biologica del corpo umano nei suoi processi e stati di sensazione, nutrizione, generazione, salute e malattia, invecchiamento e morte. Mostro come il maestro parigino, nel descrivere l'organismo vivente, si riferisca ampiamente ad idee mediche. Questo uso del pensiero medico da parte di Buridano ci invita a valutare in che misura la sua biologia dipenda o si distanzi dal modello teorico aristotelico di riferimento.

Capitolo 1

In questo capitolo, ripercorro le tappe della *scholarship* su Buridano dagli studi sulla teoria dell'*impetus* ai giorni nostri. Mostro come la filosofia naturale buridaniana abbia progressivamente acquisito un ruolo di rilievo. Negli ultimi decenni, infatti, diverse opere buridaniane di filosofia naturale sono state edite per la prima volta e questo settore del pensiero di Buridano ha particolarmente attratto l'attenzione degli studiosi, soprattutto per quanto riguarda la teoria sull'anima. Più di recente, inoltre, anche il *corpus* dei *Parva naturalia* ha cominciato ad essere esaminato. In continuità con questa tendenza, apro una nuova area di ricerca sulla filosofia buridaniana della natura che miri a considerare la relazione tra questa e la medicina nei testi di filosofia naturale. Questa ricerca prova a rispondere alla domanda se, come e in che misura Buridano abbia incluso fonti e dottrine mediche, sia tradizionali che del suo tempo, nel suo insegnamento di filosofia naturale e nella sua descrizione biologica del corpo. La linea di ricerca che propongo è particolarmente rilevante: Buridano può essere infatti considerato un filosofo naturale 'genuino', perché attivo in un contesto istituzionale, quello dell'Università parigina, in cui Arti e Medicina erano ben distinte.

Capitolo 2

In questa sezione, digressiva rispetto alla linea argomentativa principale della tesi ma altresì necessaria al mio studio, porto prove addizionali e definitiva conferma dell'attribuzione a Buridano di un commento allo pseudo-albertino *De secretis mulierum* contenuto nel manoscritto Erfurt, Universitätsbibliothek, Dep. Erf., CA Q.299. Da un confronto tra la prima *quaestio* del manoscritto di Erfurt con una *quaestio* del *De generatione et corruptione* di Buridano emerge infatti che i due testi presentano chiare somiglianze e sovrapposizioni nella struttura, nella formulazione e nei contenuti. Inoltre, escludo la paternità buridaniana di un'opera sui segreti delle donne contenuta nel manoscritto Paris, Bibliothèque Nationale de France, Ms. lat. 8513 e dimostro che si tratta, invece, di una versione del *De secretis mulierum* dello pseudo-Alberto Magno.

Capitolo 3

I capitoli centrali del lavoro sono dedicati all'analisi del rapporto tra filosofia naturale e medicina in Buridano. Per rispondere alla domanda che guida questa ricerca, ho selezionato quattro casi di studio: due di questi, il problema dell'organo egemone del corpo e dei ruoli maschile e femminile nella riproduzione, appartengono alla cosiddetta 'controversia tra medici e filosofi'; gli altri due sono basati su concetti medici, la '*complexio*' e l''umido radicale', che ebbero un grande impatto nella descrizione medievale dei fenomeni e dei processi corporei. Il capitolo 3 ha come oggetto i primi due casi di studio. Guardando ai commenti al *De anima* e ai *Parva naturalia*, descrivo innanzitutto la soluzione buridaniana ai problemi della localizzazione corporea del *sensus communis* e dell'origine delle vene e del sangue. Esploro poi la teoria di Buridano sulla generazione umana come emerge dal commento al *De secretis mulierum*. Il modo in cui il maestro parigino affronta gli argomenti controversi dell'organo egemone e dei ruoli dei sessi nella riproduzione mostra che egli non cercasse semplicemente una concordia tra le opinioni contrarie (quella filosofica e quella medica) ma che considerasse i temi controversiali come l'occasione per fornire una personale ed elaborata descrizione dei fenomeni biologici, inclusiva di idee mediche.

Capitolo 4

In questo capitolo analizzo i concetti di '*complexio*' e di 'umido radicale' nei commenti

buridaniani al *De generatione et corruptione*, ai *Parva naturalia* e al *De secretis mulierum*. Buridano incluse l'idea medica di un bilanciamento delle qualità corporee e degli umori sia nella sua discussione sulla possibilità di una *mixtio* corporea perfettamente temperata, sia nella sua trattazione dei temi della longevità e delle fasi mestruali femminili. In tutti questi casi, ma in maniera più evidente e radicale nei *Parva naturalia*, Buridano mostra di cogliere l'accezione relativizzante e comparativa della concezione medica della *complexio*, accezione tipica della tradizione medica ma anche dei testi di medicina teorica a lui contemporanei. Il concetto di '*humidum radicale*', assieme al suo gemello 'umido nutrimentale', è inserito da Buridano nella discussione sul processo di invecchiamento e morte dell'organismo. Nei *Parva naturalia*, il maestro parigino dimostra una certa familiarità sia con i precedenti risultati dei dibattiti sulle umidità corporee ereditati da Arnaldo da Villanova e Pietro d'Abano, sia con i dibattiti sull'umido corporeo a lui contemporanei, basati sulla coppia concettuale di '*humidum fluens*' e '*humidum consolidatum*'.

Capitolo 5

La sezione conclusiva ripercorre l'analisi tracciata nei capitoli precedenti e offre ulteriori considerazioni, sia metodologiche, sia teoriche, sul contributo di questa tesi alla *scholarship* buridaniana. Sottolineo il risultato centrale della ricerca: l'interesse di Buridano verso il sapere medico e la sua volontà di immetterlo nel *corpus* della filosofia naturale per raffinare la propria descrizione della biologia del corpo. Metto poi in rilievo che l'orizzonte teoretico ed epistemologico in cui Buridano si muove nel formare la sua visione del corpo rimase aristotelico, fatto che non dovrebbe destare sorpresa. Il ruolo istituzionale di Buridano, infatti, era quello di commentare la filosofia (naturale) aristotelica. Allo stesso tempo, ed è questo l'aspetto più cogente su cui invece soffermarsi, all'atto di costruire la teoria biologica dell'organismo, l'aristotelismo buridaniano viene integrato con un'altra fonte di sapere, quello medico.

Nelle conclusioni, evidenzio poi che il presente lavoro costituisce il punto iniziale per future ricerche in cui la relazione tra filosofia naturale e medicina sia indagata, in maniera più ampia, in altri maestri delle Arti parigini prima e dopo Buridano. Infatti, se questo argomento ha già una buona tradizione di studi per il versante italiano, è invece rimasto pressoché inesplorato per il *milieu* d'oltralpe. Queste future ricerche dovranno soprattutto considerare più da vicino la tradizione dei commenti ai *Parva naturalia*. In ultimo, da un punto di vista metodologico generale, sottolineo il vantaggio e la necessità di studiare il *corpus* buridaniano nei suoi termini propri e in

relazione al proprio orizzonte spazio-temporale. Solo questo criterio, infatti, consente di rivolgersi ad aspetti nuovi e sottovalutati della filosofia buridaniana. La presente ricerca, condotta sulla base di quel criterio, conferma la multidisciplinarietà con cui Buridano costruisce la propria filosofia, cercando un'ermeneutica delle fonti d'autorità che miri ad una descrizione veritativa e comprensiva della realtà.

Summary

This thesis examines the relationship between natural philosophy and medicine in the works of John Buridan († ca. 1361), especially in his commentaries on *De anima*, *De generatione et corruptione*, the *Parva naturalia* (in particular *De longitudine et brevitate vitae* and *De morte et vita*), and *De secretis mulierum*. In addition, this study provides the first critical edition of Buridan's questions commentary on pseudo-Albertus Magnus' *De secretis mulierum* (*On Women's Secrets*). By taking into account understudied, and partly unedited texts, this study sheds light on some unknown aspects of Buridan's thought. I trace the main features of Buridan's description of the human body related to sensation, nutrition, generation, health and disease, ageing, and coming-to-death. Ultimately, I argue that Buridan's description of living organisms relies to a large extent on medical ideas. It invites us to consider in what ways Buridan walks on and off the Aristotelian path when the description of biological phenomena is concerned.

Chapter 1

The first chapter presents an historical overview of the scholarship on Buridan from the studies on the '*impetus*' theory to the present day. It shows how Buridan's natural philosophy progressively acquired a prominent role. In the past decades, several works of Buridan's natural philosophy have been edited for the first time and Buridan's natural philosophical thought has attracted scholarly attention, especially his views in the field of 'psychology'. More recently, Buridan's commentary on the *Parva naturalia* has been edited. Against this background, I open a new area of research on Buridan's natural philosophy: a study on the relationship between natural philosophy and medicine in Buridan's commentaries on natural philosophical texts. This research particularly aims at considering if, how, and to what extent Buridan made use of traditional and contemporary medical sources and doctrines in his commentaries on Aristotle's natural philosophy. This research question is particularly interesting because Buridan was a 'genuine' natural philosopher, working in an institutional framework (the University of Paris) in which the *artes liberales* and medicine were institutionally distinct from one another.

Chapter 2

This chapter, which is necessary for the consistency of my thesis, provides a detailed argumentation in favor of Buridan's authorship of the *Quaestiones de secretis mulierum* (a questions commentary on pseudo-Albertus Magnus' text *On Women's Secrets*), contained in manuscript Erfurt, Universitätsbibliothek, Dep. Erf., CA Q.299. This examination is mainly based on a comparison between the first *quaestio* in the Erfurt manuscript with one *quaestio* from Buridan's commentary on Aristotle's *De generatione et corruptione*. The two texts present striking similarities in structure, wording, and contents. In this chapter, I also show that Buridan's authorship of another text on women's secrets, contained in manuscript Paris, Bibliothèque Nationale de France, lat. 8513 must be rejected. As a matter of fact, the text in the Paris manuscript is not a commentary by Buridan on pseudo-Albertus' *De secretis mulierum*, but rather a different version of pseudo-Albertus' work.

Chapter 3

The central chapters of this thesis (chapters 3 and 4) contain the details of my analysis of the relationship between natural philosophy and medicine in Buridan's works. In order to answer my research question, I examine four case studies. Two of them (concerning the 'hegemonic organ of the body' and the role of males and females in reproduction) belong to the so-called 'controversy between philosophers and physicians'. The other case studies are based on medical concepts that had a strong impact on medieval descriptions of corporeal phenomena, i.e., the concepts of 'complexion' (*complexio*) and 'radical moisture' (*humidum radicale*). Chapter 3 presents the first set of case studies. Based on Buridan's commentaries on Aristotle's *De anima* and *Parva naturalia*, the case study on the hegemonic organ examines Buridan's solution of the widely debated issues of the localization of the common sense (*sensus communis*) and of the origin of veins and blood. The second case study explores Buridan's theory of human generation as it is described in the commentary on the *De secretis mulierum*. Buridan's way of dealing with the controversial topics of the hegemonic organ and reproduction shows that he was not simply searching for a reconciliation between the opposite views of philosophers and physicians, but that he was taking the occasion of the controversial topics to provide a personal, elaborate description of bodily processes, which included medical ideas.

Chapter 4

This chapter analyses the concepts of 'complexion' and 'radical moisture' in Buridan's commentaries on *De generatione et corruptione*, the *Parva naturalia*, and *De secretis mulierum*. Buridan uses the medical idea of a 'balance' of bodily qualities and humors in his discussions on the possibility of a perfectly tempered corporeal mixture, on the length of life, and on the parallelism between female menstruation and the phases of the moon. In all these cases, but most forcefully within the topic of longevity, Buridan shows an ability to grasp a relative and comparative notion of 'complexion', which was typical of both the medical tradition and the medical treatises of his times. The cluster of concepts related to '*humidum radicale*' is used by Buridan in his discussion of the organism's ageing and coming-to-death. In his commentary on the *Parva naturalia*, he appears to be acquainted with previous medical positions on radical and nutrimental moisture (more specifically with the legacy of Arnaldus of Villanova and Peter of Abano's views of bodily moistures) and with contemporary debates on moistures based on the conceptual couple '*humidum fluens*' and '*humidum consolidatum*'.

Chapter 5

The conclusions in chapter 5 retrace the analysis carried out in the previous chapters and make some more general claims concerning the contribution of this thesis to Buridan scholarship. The conclusions underline Buridan's interest in medical ideas and his willingness to integrate medicine in his works on natural philosophy in order to refine his own descriptions of biological phenomena and processes. They also point out that Buridan's overall epistemological and theoretical framework when describing the human body remained Aristotelian. We should not have expected anything different: Buridan's professional task as a Master of Arts was to comment on Aristotle's (natural) philosophy. At the same time, Buridan's basic Aristotelianism was supplemented and enriched by another field of knowledge, i.e., medicine.

In the conclusions, I also underline that my analysis of Buridan constitutes a starting point for further and more elaborate research on the interplay between natural philosophy and medicine in the Parisian Faculty of Arts *before* and *after* Buridan. While the Italian *milieu* has already been relatively well studied from this perspective, the same does not apply to the universities north of the Alps. In this regard, especially the commentary tradition on the *Parva naturalia* needs to be more thoroughly analyzed. Finally, from a general methodological point of view, I argue

that Buridan's works must be studied on their own terms and in relation to their own time and place. Only in this way it will be possible to explore new or underestimated aspects of his thought. My own attempt along these lines confirms that Buridan was a multifaceted author using a multidisciplinary approach to philosophy, searching for a creative hermeneutics of authoritative texts, and pursuing a comprehensive description of reality.

Curriculum vitae

Chiara Beneduce was born in Rome on July 27, 1989. She earned her Bachelor's and Master's degrees in Philosophy (*cum laude*) at the University of Roma Tre (Italy), respectively in July 2011 and April 2013. In November 2013, she started her Ph.D. in Philosophy at the Universities of Pisa and Florence (Italy) and Radboud University, Nijmegen (The Netherlands). Her Ph.D. dissertation is the result of a joint degree agreement between the Universities of Pisa and Florence and Radboud University, Nijmegen. In 2016, she received a Notre Dame – SIEPM stipend to work at the Medieval Institute of the University of Notre Dame (IN). The Faculty of Philosophy, Theology and Religious Studies of Radboud University, Nijmegen awarded her a Talent Grant (SWT) in 2016 to carry out postdoctoral research. In 2016, she organized two international workshops: 'Recent Studies on John Buridan's Natural Philosophy and Metaphysics', at the Center for the History of Philosophy and Science, Radboud University, Nijmegen (with prof. P. Bakker) and '*Oeconomia corporis*. The Body's Normal and Pathological Constitution at the Intersection of Philosophy and Medicine', at the University of Florence and Museo Galileo (with dr. D. Vincenti).